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ABSTRACT

The apparel design and production guide is the second of a series of five interrelated program resource guides encompassing the various dimensions of the fashion industry. Designed to provide youths and adults with intensive preparation for initial entry employment and also with career advancement opportunities within specific categories of jobs, the guide provides an overview of the apparel industry, occupational opportunities, and competencies required of workers. It contains outlines of areas of instruction which include: behavioral objectives, teaching content and suggestions for learning experiences, evaluation, teaching resources, and instructional supplies. Areas of instruction range from basic textile and fashion marketing to industrial sewing, designing, and garment construction. Career advancement skills include fabric utilization, quality control, pattern making, and advanced design. Suggested equipment and approximate costs are included as well as a bibliography and a list of representative trade associations. Other program considerations and services judged to be important to this job-preparatory program are also presented. (Author/MW)

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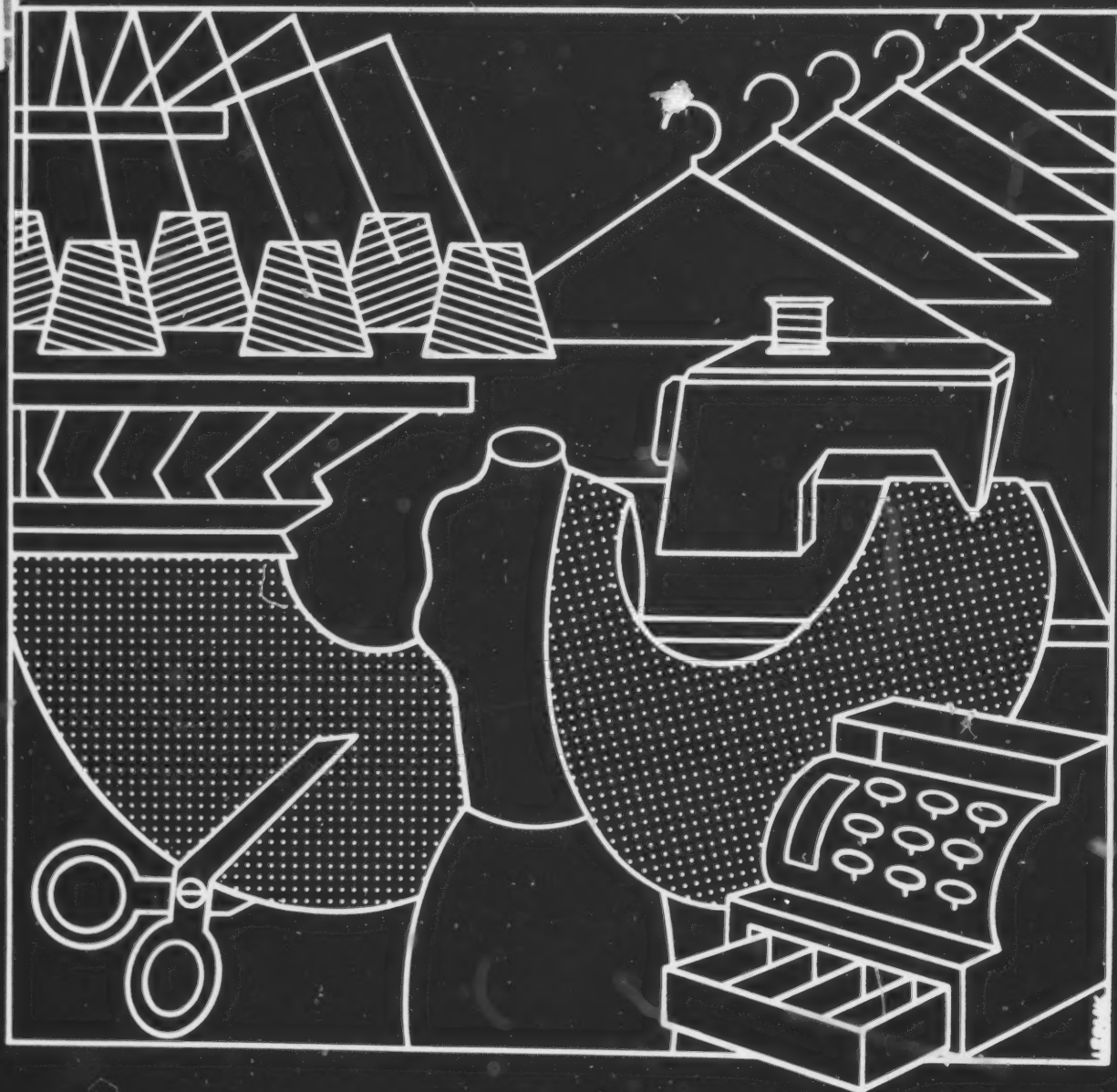
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FASHION INDUSTRY SERIES NO. 2

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Apparel Design and Production

a suggested program guide



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FOREWORD

This *Apparel Design and Production* guide is one of a series of interrelated program resource guides encompassing the various dimensions of the Fashion Industry. The purpose of the series is to provide school administrators and teachers with a source of information which can be used to establish, expand, or evaluate instructional programs related to the broad field of fashion.

The Fashion Industry Program Series includes five separate guides. *Career Exploration in the Fashion Industry* — Series No. 1 presents an introduction to the different segments of the fashion field and suggestions for a career exploration program. *Apparel Design and Production* — Series No. 2, *Textile Design* — Series No. 3, *Fashion Merchandising* — Series No. 4, and *Dry Cleaning and Laundering* — Series No. 5 are suggested job-preparatory (skill development) program guides. These job-preparatory guides are conceived to provide youth and adults with intensive preparation for initial entry employment and career advancement opportunities within specific categories of jobs in the fashion industry.

In developing the job-preparatory guides, consideration was given to the structuring of objectives, content and learning experiences in terms of the varying competencies considered essential for different levels of employment responsibility, thereby facilitating the adoption of performance-based instruction within a variety of institutional settings. The outcomes of such instruction are identified with immediate employment or continuing education, including higher education.

The *Apparel Design and Production* guide provides an overview of the apparel industry, occupational opportunities, and competencies required of workers. It contains outlines of areas of instruction which include objectives to be achieved, teaching content and suggestions for learning experiences, evaluation, teaching resources, and instructional supplies. Suggested equipment and approximate costs are included as well as a bibliography and a list of representative trade associations. Other program considerations and services judged to be important to this job-preparatory program are also presented.

All of the guides were developed by faculty specialists of the Fashion Institute of Technology pursuant to a grant from the U.S. Office of Education to the Institute. This guide was prepared by Hilde Jaffe, Associate Professor of Fashion Design; Irwin Kahn, Associate Professor and Chairman of Management Engineering Technology; and Morton Silverstein, Associate Professor of Management Engineering Technology. Jeanne Price, Associate Professor of Fashion Design, prepared the instructional area in Grading and Elita Weber, Assistant Professor of Fashion Design, assisted with the preparation of the Fashion Drawing instructional area; Howard Essig, Assistant Professor of Textiles, contributed the area of instruction in Basic Textiles.

The development of the guides was under the direction of William Berndt, Project Officer, and Mary Lee Hurt and Edwin L. Nelson, Education Program Specialists in the U.S. Office of Education.

Many useful suggestions were received from industry and educational consultants, and from administrators and teachers of existing programs. Although all suggestions could not be incorporated, each was carefully considered in terms of the publication's intended use. In view of this, it should not be inferred that the program suggestions are completely endorsed by any one institution, agency, or person.

The program suggestions contained in this guide should be viewed as resource information which can be modified and adapted by administrators and teachers to meet local, State, and regional needs.

Jeannette Jarnow
Edwin Goodman Professor,
Fashion Institute of Technology;
Project Director, Program Guides
for the Fashion Industry

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THE IMPORTANCE OF THE FASHION INDUSTRY

Fashion is as old as recorded history and as new as tomorrow. It manifests itself not only in what people wear but in what they eat, the way they talk, what they do, how they live and the things they use.

THE IMPACT OF FASHION

Fashion can be defined as all of the prevailing styles followed by substantial groups of people at a given time in a given place. Fashion touches many facets of human living and, in turn, the changing conditions of the environment in which that living takes place bring about changes in fashion. The intensity with which changes in fashion are followed by people everywhere on all levels of society is evidence of its impact on human activities and its significance as a social phenomenon.

The phenomenon of fashion has been studied, analyzed and explained in many different terms. Economists view it as an element of artificial obsolescence that impels people to replace commodities which still retain their original usefulness even though the new may not greatly differ from the old. To sociologists it represents a manifestation of social interaction and an element of status seeking; psychologists find indications of sex impulses in patterns of dress. Historians see fashions as a reflection and documentation of the ideals, tastes and values of their times just as are paintings, sculpture and other art forms.

The influence of fashion is felt not only throughout the social world but in all categories of economic activities. It is most clearly demonstrated, however, in a multi-billion dollar industry complex, commonly known as the "Fashion Industry", which is dedicated to the design, production and distribution of apparel and accessories for men, women and children. Because clothing is considered to be the oldest and purest form of fashion expression, this industry embodies more aspects of fashion than any other single rallying point.

Fifty years ago "fashion" was directed, ordained, cultivated and handled by the few, in small shop operations. Today the fashion industry is, on the one hand, the exclusive air of an elegant specialty store presenting a collection of high-priced originals and on the other hand, it is the giant factories that dispatch "blue jeans"

in endless dozens to cities and prairie towns across America.

A business that began as an enterprise of small shops now caters to and employs millions of people, offers a multitudinous array of products, utilizes a diversity of talents and ranks among the largest industries in our economy.

SCOPE OF THE FASHION INDUSTRY

The fashion industry is not a clearly defined entity. It is a complex of many different industries, not all of which appear to have anything of fashion among their products.

Plainly recognizable as part of the fashion business are those industries devoted to the making of apparel and accessories for men, women and children.

When one moves back to an earlier stage of production, to the fabrics, leathers, and plastics from which the finished products are made, the line between what is and what is not the fashion business becomes even harder to draw. Some textile mills that produce apparel fabrics also produce bed sheets, carpets, or industrial fabrics. Some chemical companies that produce fibers which eventually are spun and woven and cut to make garments are producers also of explosives, fertilizers, and photographic film. Some producers and processors in fields normally remote from fashion find themselves temporarily with one foot in the fashion business when prevailing styles demand such items as industrial zippers, chain belts, paper dresses, or whatever the case may be. A season or two later, they may be as far removed from it as ever, but for the time being they too are part of the business of fashion.

The fashion business includes the stores that sell and service apparel and accessories, and the mail-order catalogues from which many consumer purchases are made. It includes businesses that neither produce nor sell merchandise, but render advice, assistance or information to those that do. In this last category are consumer publications that disseminate news of fashion, ranging from the women's page of the daily newspaper to magazines devoted primarily to fashion news such as *Vogue*, *Harper's Bazaar* or *Gentlemen's Quarterly*. Also included

in this category are trade periodicals which carry news of fashion and information on production and distribution techniques to retailers, apparel manufacturers, and textile mills. It includes also publicists and advertising specialists, fashion consultants, and buying offices that represent retail stores in the vast wholesale centers.

All these and more are part of the business — farms and mills and factories, union labor and white-collar workers, business tycoons and creative artists. All play their parts in the business of fashion.

ECONOMIC IMPORTANCE *

The economic activities involved in the design, production, merchandising and maintenance of textiles, apparel and accessories are a sizeable force in our nation. Whatever yardstick one uses as a measurement, their importance becomes clear.

In terms of money that Americans spent in 1972, clothing, accessories, shoes and clothing care services accounted for 62 billion dollars, an amount which constituted almost 10% of total consumer expenditures. In terms of factory output, the industry also ranks high. Textile output for 1972 reached 28 billion dollars and factory shipments of men's, women's, and children's apparel exceeded 26 billion dollars.

Millions of people are employed in producing textiles and apparel, in staffing the retail stores that make this merchandise available to the consumer, and in the retail or industrial establishments that specialize in clothing services. Of the 20 million people employed in U.S. manufacturing industries in 1972, practically one in every eight was employed either in the industry divisions that produce apparel for men, women and children or that produce the materials from which clothing is made. The apparel segment which alone employs almost 1.4 million people is the 6th largest employer of people in the manufacturing sector of the economy and, for example, employs more people than the entire printing and publishing field or the chemical and drug industry. In addition, retail outlets that play a significant part in the

distribution of clothing employed the services of more than ¼ of the 11.7 million men and women engaged in retail occupations in 1972 and of this number it is estimated that 50% are engaged in activities directly concerned with the merchandising of apparel and textile products. Dry cleaning and laundering service establishments employed an additional ½ million.

The industry is also important to all parts of the country rather than just a small geographic area. Although the heaviest concentration of textile manufacturing facilities is in the South and New England, some phase of textile activity is carried on in nearly every state of the Union. Apparel production plants can also be found in every state and are increasingly being located in small towns where, in many cases, they are the only industry or the largest employer. Apparel and fabric retailers are to be found in every major city, in every suburb and in the smallest of towns.

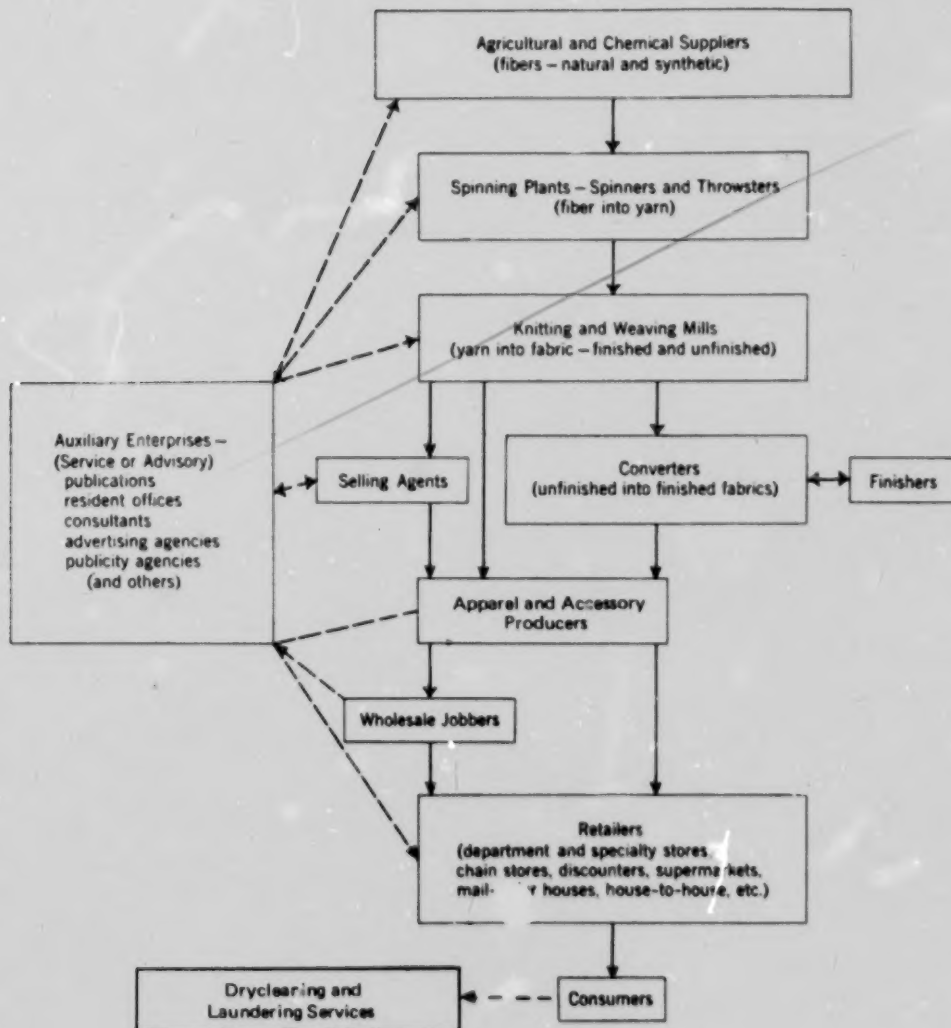
BROAD RANGE OF OCCUPATIONAL OPPORTUNITIES

Numbers alone, however, do not tell the full story of the importance of the fashion industry as a field of employment opportunity. The industry is many-faceted and offers a host of varied entry-jobs and career opportunities. It employs workers with every degree of skill and educational preparation. Training and/or experience in one segment is often an asset applied to another. Working conditions and financial compensation are satisfactory, and good pay is a by-product of good training, good job performance, good experience and good breaks. Pay rates vary from city to city, from company to company and from time to time.

There is a place in the industry for people with many different types and levels of skills which require diverse talents, interests, and educational preparation. Technicians and artists, chemists and engineers, originators and copyists, cutters and sewers, buyers and sellers, administrators and entrepreneurs... all these and more constitute the variety of occupational opportunities in the complex of industries involved in the design, production, distribution, maintenance and care of textiles and apparel.

*Source of figures: U.S. Industrial Outlook 1973, U.S. Department of Commerce

FASHION INDUSTRY FLOW CHART



UTILIZATION OF THE GUIDE

School personnel using this guide will find that modifications can be easily made to fit the local conditions of their specific situation. The design of the overall suggested program is such that areas of instruction can and should be combined or eliminated entirely in adapting the program to meet local needs.

STRUCTURE OF THE PROGRAM

The components of the program suggested in this guide are based upon the differing performance requirements of different levels of employment responsibility. The program, therefore, reflects levels of competency to be achieved rather than levels of education, thereby facilitating its adaptation and use by secondary schools, post-secondary institutions and other types of training centers.

The basic skill development areas of instruction correspond to specific competencies needed for basic entry jobs and aim to prepare students for initial employment. The advanced areas of instruction progress in depth, scope and complexity of content and are designed to serve the needs of students who have more advanced career goals and/or greater educational or employment experience. The fundamental background areas of instruction, although not necessarily essential for some basic skills, broaden the students understanding of the occupational field and enhance their opportunities for job satisfaction and career progression. Where necessary for the development of specific skills, they are noted as prerequisites in the outlines of the areas of instruction.

The areas of instruction in the guide and the teaching modules in the instructional guidelines are flexible enough to allow for vertical and/or lateral occupational training plans. For example, enrollees in the program can:

1. *Either* progress laterally, component by related component, from simple to complex job skills in such a way that they can exit at varying points with a mastery of a specialized skill, if they choose not to complete the entire program.
2. *Or* enter the program at wherever they are occupationally and move vertically (or laterally) as far as they can or choose.

CONSIDERATIONS IN ADAPTATION AND MODIFICATION

The number of the different areas of instruction that are offered, the manner in which they are combined, the emphasis that is given to the different levels of areas of instruction and the comprehensiveness of the program will depend upon:

- The type of educational institution in which the program is being offered: for example, an adult training center would be less likely to offer the entire program than a post-secondary school.
- The time available for the program: for example, it would be more advisable in a one-year program, as contrasted to a two-year program, to eliminate complete areas of instruction rather than compromise the development of specific competencies desirable for meaningful employment.
- The occupational opportunities in the community: for example, it would be wiser to put more emphasis on the production program than the design program if employment opportunities in the design field are non-existent or limited in the community.
- The job levels for which the program is designed: for example, little or no emphasis should be put on career advancement areas of instruction if the objective of the program is to prepare students for basic skill entry jobs.
- The nature of existing programs in the educational institution: for example, complete areas of instruction in apparel design or apparel production could be substituted or added and offered as an option to students who are enrolled in currently existing clothing and textile programs.
- The students special needs and occupational goals: for example, being responsive to students' individual needs in terms of where they are and what they wish to be.
- The opportunities that are available to the students for continuing study and articulation with advanced job-preparatory programs: for example, a secondary school in a community which does not offer post-secondary job-preparatory pro-

grams should include career advancement areas of instruction; a secondary school in a community in which post-secondary job-preparatory programs are already in existence might do better to concentrate on fundamental background and basic skill development areas of instruction.

TIME ALLOTMENTS

The hours to be allotted to each area of instruction should also be modified and adapted to suit local situations. However, it is suggested that certain teaching modules and/or complete areas of instruction be eliminated rather than weaken the development of skills needed for job entry.

THE APPAREL DESIGN AND PRODUCTION FIELD

The apparel industry is that segment of the fashion industry complex concerned with the design and manufacturing processes of most of the apparel sold in this country.

There are some 23,000 firms in the apparel industry which perform one or more of the processes involved in changing the form of fabrics and other raw materials into finished garments for men, women and children. Some firms perform all the tasks beginning with the design of garments and ending with their distribution to retail outlets. Others design and cut the garments, send the cut pieces out to sewing shops to be sewn and finished, and then take over the distribution process. The sewing factories that specialize in taking the cut fabric for sewing and finishing are called contractors.

The "factory phase" of the industry is located in all parts of the country. However, design and marketing activities are, for the most part, centered in New York, Los Angeles, San Francisco, Chicago, St. Louis, Min-

neapolis, Miami, Dallas, Kansas City, and Philadelphia. It is the leading industry in the City and State of New York.

MANPOWER NEEDS

The apparel industry as a whole, men's, women's and children's combined, is highly labor intensive. As compared to industries which are highly automated, the ratio of apparel workers to total output is very high. Its almost 1.4 million workers represent 7% of the total manufacturing employees in this country. In terms of employment of women, the apparel industry ranks first because women comprise 81% of its total labor force. Although the industry is large, the typical establishment is small, with an average of 55 employees per establishment. (Source: U.S. Industrial Outlook 1973, U.S. Department of Commerce)

Occupational opportunities and activities are varied

APPAREL MANUFACTURING PLANT DISTRIBUTION BY STATES*

STATE	NO. OF PLANTS	RANK	STATE	NO. OF PLANTS	RANK	STATE	NO. OF PLANTS	RANK
Alabama	176	19	Kentucky	131	24	North Dakota	2	50
Alaska	8	46	Louisiana	88	27	Ohio	391	10
Arizona	65	33	Maine	40	37	Oklahoma	91	26
Arkansas	68	32	Maryland	324	12	Oregon	64	35
California	1,719	3	Massachusetts	942	5	Pennsylvania	1,993	2
Colorado	75	31	Michigan	297	14	Rhode Island	65	33
Connecticut	229	16	Minnesota	136	23	South Carolina	202	17
Delaware	21	42	Mississippi	129	25	South Dakota	6	48
Dist. of Columbia	23	41	Missouri	460	8	Tennessee	279	15
Florida	352	11	Montana	4	49	Texas	666	7
Georgia	392	9	Nebraska	37	39	Utah	38	38
Hawaii	79	28	Nevada	8	46	Vermont	14	44
Idaho	12	45	New Hampshire	32	40	Virginia	149	21
Illinois	799	6	New Jersey	1,275	4	Washington	149	21
Indiana	167	20	New Mexico	20	43	West Virginia	42	36
Iowa	78	29	New York	9,110	1	Wisconsin	178	18
Kansas	76	30	North Carolina	308	13	Wyoming	2	50

Source: Dun & Bradstreet, Inc., 1969

22,011 United States total

*The figures used refer to each apparel manufacturing plant location. This includes headquarters and branch location, if it includes a manufacturing operation, as well as each contract manufacturing location.

enough to interest widely differing kinds of people and provide an outlet for the talent of gifted, creative individuals as well as employment for workers who are happiest at routine skills.

The increasing interest in fashion, paralleled by the impact of technological developments in the industry, has created a growing need for well-trained fashion design and production personnel.

APPAREL DESIGN

The styling and design of their products are a vital element in the success of an apparel firm. The creative expression of the design staff is even more important in the apparel segment of the fashion industry than in the textile segment where science, intricate textile machinery and manufacturing processes frequently play the dominant role. Although it is often hard to pinpoint where original designing ends and copying begins, apparel designers are employed in every phase and branch of the industry. Theirs is the responsibility for developing a "line" of garments to be shown to prospective retail buyers.

The size and personnel of the design staff varies from firm to firm. In small firms the designers may work alone. Large firms may have several design rooms supervised by different designers, each with his or her own helpers. Moderate-sized firms may have one designer with several assistants. Since the average-sized firm in the industry is moderate in size, the typical design staff consists of a head designer with three or four workers to help.

The responsibilities and activities of designers also vary from place to place depending upon the size of the firm and the nature of its product. In some cases designers' activities are confined to designing and supervising the design workroom. In others, the designer may be involved in every step of the production of the line from the original idea to the completed garment. This is particularly true in the men's tailored clothing field where fit and tailoring are of prime importance and where the designer is often a highly trained production technician.

Garment designers differ in the methods they use to create their designs. Some work out their ideas in rough sketches which are then translated into muslin or fabric. Others develop their designs by draping muslin or fabric experimentally on a dressmaking form. There are still others who do both.

The creation of designs is but one aspect of a designer's job. Once a design has crystallized, a pattern must be made so that the fabric can be cut and sewn into a sample or trial garment. Depending upon the size of the design staff, the first pattern may be cut by the

designer or by a patternmaking assistant. A sample maker who works closely with the designer sews the sample garment and makes revisions where the designer thinks necessary. After a satisfactory sample has emerged, it is assessed and discussed with the company executives for costs, sales potential and any production problems that may affect the design when it goes through the mass production process. At this point, some designs may be further modified while others are discarded entirely.

Desired Competencies

Designers are creative artists in the sense that they work with line, color, shape and texture. They are also craftsmen in that their medium is fabric and their "paint brushes" are scissors and pins. The basic competencies that designers need are a creative and productive imagination, finger dexterity and a keen interest in fashion, coupled with specialized expert preparation in practical techniques of patternmaking, sewing, draping, cutting and fashion drawing. They must also be thoroughly conversant with the nature of fabrics, the construction of garments and be knowledgeable about manufacturing processes and the ultimate consumer for whom their designs are intended.

Educational Preparation

Design students may find that they work better in one medium or technique than another. Perhaps sketching is more to their liking than draping or patternmaking, or vice versa. The better an aspiring designer is prepared in all of the areas discussed above, the broader will be the opportunities for promising entry jobs and career progression. Specifically helpful and applicable for a career in apparel design are studies in fashion drawing, pattern development, clothing construction, basic textiles and the historical development of fashion.

As important as the vocational skills which contribute to the students' professional competency are other disciplines which contribute to the social, civic, personal development and the "life skills" of the students, and deepen their understanding of the economic and humanistic forces which influence the industry. Disciplines which stress communication skills and problem solving are important for all students. Also important for design students are studies in art appreciation, the social sciences and arithmetic.

Occupational Opportunities

So much of an apparel firm's life depends upon the styling of its line that the designing responsibility is

rarely entrusted to a beginner, even a fantastically talented one. Well-prepared beginners, aside from opening their own boutiques or custom dressmaking shops have access to a number of entry jobs below the designer's level from which they can progress. Jobs as fashion sketchers, sample makers, assistants to patternmakers or graders, and design room trainees are all paths that can lead to positions as assistant designers and designers.

Although apparel manufacturing plants are located in all parts of the United States, the design activities of the industry are quite geographically concentrated. The majority of employment opportunities in designing for mass production are in New York City where a large percentage of apparel firms have their styling and sales headquarters. There are, however, design centers which are more limited in scope in such cities as Los Angeles, San Francisco, Dallas, Chicago, St. Louis, Minneapolis, Kansas City, Miami, Boston and Philadelphia.

For a person with specialized training in the practical techniques of fashion designing, there are many other skill-related occupational opportunities which are more ubiquitous in location. For example, skill in sewing can lead to work as an alteration hand in small and large retail stores which are located everywhere. Sewing skills coupled with a knowledge of garment construction and patternmaking broaden occupational opportunities as fitters in alteration departments and men's tailoring or ladies' dressmaking shops. Individuals capable of making complete garments from pattern to final sewing can even become independent dressmakers or custom tailors and develop a clientele of their own.

A fast-growing source of beginning jobs and career opportunities is among the group of industries and activities that service the steadily increasing numbers of home sewers in this country. These include pattern companies, thread companies, notion producers, sewing machine manufacturers and the over-the-counter fabric departments of textile companies and retail stores. Jobs related to home-sewing services include sewing instructors, sales personnel for fabrics and patterns, demonstrators, assistants to patternmakers, fashion sketchers and pattern company staff designers.

In short, beginning jobs and career opportunities are everywhere for all those who love fashion and fabrics, understand garment construction, have specialized preparation in practical techniques of patternmaking, sewing, draping and fashion sketching, and can illustrate their ideas in practical and commercially saleable ways.

Related Occupational Opportunities in Accessory Design

The industries that design and manufacture accessories are as diverse in size and nature as the merchandise

itself. Some, like shoes and hosiery, are dominated by huge producers; others like jewelry, handbags, scarfs, belts and gloves are made up of relatively small firms. Some operations are highly mechanized; others still use hand operations not much changed from those that prevailed 50 years ago. The design and selling activities of the large producers are concentrated in New York; smaller producers are located in all parts of the country.

Accessory design is a fertile field for beginners with design aspirations. Many of the accessory areas, however, are separate specialties which require an understanding of specialized materials as, for example, jewelry which demands a knowledge of the properties of metal.

For the artistically inclined person, the design of accessories is a challenging field in which a talented beginner or freelancer can find creative opportunities. Many small firms in the field depend on free-lance designers to style their lines. A background in apparel designing, although not necessary, is helpful in order to design accessories that coordinate with apparel fashions. A knowledge of production processes and problems is essential; designing for commercial purposes has to result in saleable as well as fashionable styles.

APPAREL PRODUCTION

Within the production activities of the apparel manufacturing process, a wide variety of occupations and skills are needed. Young men and women interested in the field of apparel production can find one or more employment opportunities that will fit their ability and interest and from which they can progress career-wise. There are jobs for skilled *patternmakers* and *graders* who make the paper patterns which are then graded according to sizes so that the styles created by designers can be produced in quantity and will fit properly. After the graded patterns are made, *spreaders* lay up fabrics and *markers* lay out the patterns on piece goods which are then cut by *cutters* who use either electric cutting machines, shears or hand knives. *Assorters* then assemble the cut cloth into bundles, either by individual garments or in lots. The bundles are given to *sewing machine operators* who sew the garments together. Most sewing operators are specialists who construct a small part of the garment except in the very high-priced garment field where an operator makes the entire garment. In some sewing shops there are *drapers* who are used to prepare the garments for the final operations. *Section* and/or *shop foremen* and *foreladies* supervise the operators. These are generally experienced operators who have progressed to supervisory positions.

The sewn garments then go to *finishers* who do most of the sewing that has to be done by hand. Some of their work is also done with the assistance of special ma-

chines. Once their work is completed the garments go to *cleaners* whose task it is to remove loose threads and remove spots on the finished garments. The usual plant also includes *pressers* who operate the automatic pressing machines. Some pressing may be done as a garment is assembled; sometimes it is done at the completion of all sewing. There are also a variety of such auxiliary workers needed in a factory as *receiving* and *shipping clerks* and *production control clerks* who direct and distribute the sequence of orders to be completed.

The overall factory operations are supervised by *plant* and/or *production managers*, many of whom have started out as factory workers and have advanced to executive managerial capacities. Others have had post-secondary technical engineering education which includes courses in factory layout, time and motion study, quality control and production planning and the like.

Desired Competencies

To a greater or lesser degree dependent upon the specific job, production workers require the following desired competencies:

1. Manual and/or finger dexterity
2. Ability to manipulate materials, machines or equipment
3. Normal level of vision (colors and shades)
4. Physical ability to carry and move work loads
5. Understanding of fabrics
6. Understanding of garment construction

Educational Preparation

A young man or woman who is manually dexterous and has an interest in apparel production can enter a factory as a relatively unskilled worker and through employment experience and on-the-job training, develop some elementary skills. While employed they can usually find a training program in which they can upgrade their job-skills by taking courses in cutting, patternmaking, grading, and even design or factory management.

Factory production, however, is becoming more scientific and technologically advanced. Some specialized educational preparation which includes a co-operative work experience is more advisable for meaningful entry jobs and faster advancement than factory experience alone. As is true for most occupations today, the level of initial employment tends to reflect the degree and level of educational preparation. For example, a relatively short period is necessary to acquire the skill of a sewing machine operator. Over a period of time there has been a definite trend in breaking down the many operations of sewing a garment so that while

there are many different operations needed, the individual operations are usually relatively simple. In the men's clothing field where more tailoring skills are needed, the training period is longer for one to become an expert tailor or operator.

Obviously it is necessary to have more skill development preparation for initial-entry into cutting and patternmaking departments which are responsible for the proper fit of garments and the handling of costly piece goods. Skilled patternmakers and cutters are among the most highly paid production workers. With specialized preparation in the areas of textiles, patternmaking, grading, marking and cutting, the beginner is equipped to start as a fabric spreader from which he may then advance to cutting or to an assistant to a patternmaker. Furthermore, all of the skills acquired in specialized preparation for a job in apparel production are often transferable from one branch of the industry to another.

Further preparation, usually offered at a post-secondary level in technical engineering, is invaluable for preparation as, or advancement to, plant and/or production managers. Technical engineering programs include techniques of factory layout, time and motion study, quality control, production scheduling and garment costing, among other areas of study related to industrial management. Courses such as these can be taken either in conjunction with job experiences or as full-time post-secondary preparation for entering positions as management trainees — positions which are usually reserved for graduates of such programs.

As important as the vocational studies which develop the students' technical competencies are other disciplines which contribute to their social and personal development. Arithmetic and applied mathematics are important for apparel production students as are studies which stress communication skills and problem solving.

Occupational Opportunities

There are apparel production plants located in the small towns and large cities in every State. As the 6th largest employer of people of all manufacturing occupations in our country, they are a vast source of employment opportunities for men and women alike regardless of race, color or creed. As is to be expected, entry jobs correspond to levels of education. Many people, however, who have started as factory workers have achieved high positions in the industry without benefit of college education. There are also related job and career advancement opportunities for a person with specialized training in some or all of the practical techniques of apparel production. For example, sewing skills can lead to work

as alteration hands in retail establishments or dress-making and tailoring shops.

PROFILE OF OCCUPATIONS IN APPAREL DESIGN AND PRODUCTION

Since many entry jobs in the apparel industry can lead to careers in either apparel design or apparel pro-

duction, depending upon the aptitudes and interests of the worker, the following chart overviews and summarizes the possible jobs in both areas. The places of employment and responsibilities of workers are classified according to entry jobs and advanced career opportunities. Exact job titles may vary from place to place and are subject to change as technologies change and new positions are created.

D = Design

P = Production

DP = Design and Production

Entry Jobs

OCCUPATION	PLACES OF EMPLOYMENT	WHAT WORKERS DO
Folder (P)	Apparel Factories	Fold, pin, bag, tag, and box finished garments.
Bundler (P) (Sorter)	Apparel Factories	Sort bundles of cut parts according to size, color and shade and tie them into bundles.
Bundle Handler (P) (Floor Boy or Floor Girl)	Apparel Factories	Distribute and collect bundles of garment parts and supplies to the various production workers in a garment plant; cut work apart, stack it, and may mark location points on garment parts.
Spreader (P)	Apparel Factories Drapery & Slipcover Factories	Color shade bolts of cloth, mark spreading length on cutting table, lay up fabric on table by hand or with a spreading machine, lap cloth so that complete garments are produced; perform odd jobs such as carrying material to and from piece goods storage.
Draper (DP)	Apparel Factories	Examine partially finished garment for fit and possible sewing imperfections; pin final details into place, such as bows, flowers, etc., before garment is completed.
Hand Cutter (DP)	Custom Dressmakers Custom Boutiques Manufacturers	Cut individual garments by hand.
Hand Finisher (DP)	Apparel Factories	Hand sew buttons, hems, linings, finishing details; press samples by hand.
Production Cutter (P)	Apparel Factories	Cut parts of garments from many layers of cloth using an electric cutting machine, or from a few layers of cloth with a manual cutting machine.
Sewing Machine Operator (DP)	Apparel Factories Embroidery Factories	Perform any sewing operation on any standard or special sewing machine; may be required to do one repetitive job task or multiple job tasks.

Entry Jobs —(continued)

<u>OCCUPATION</u>	<u>PLACES OF EMPLOYMENT</u>	<u>WHAT WORKERS DO</u>
Presser (DP)	Apparel Factories Retail Stores Cleaning Establishments	Smooth and shape completed garments and/or garment parts using steam pressing machines and/or hand irons.
Seamstress (linen room) (DP)	Hotels Hospitals	Make repairs on uniforms, bed linens and table linens.
Tailor's Apprentice (DP)	Manufacturers of tailored garments Cleaning and tailoring shops Custom Tailors Retail Stores	Work with experienced tailors to learn tailoring; will do limited hand and machine operations as skill develops.
Alteration Hand (DP)	Retail Stores	Alter finished garments following the markings made by the fitter.

Advanced Career Opportunities

<u>OCCUPATION</u>	<u>PLACES OF EMPLOYMENT</u>	<u>WHAT WORKERS DO</u>
Fitter (DP)	Retail Stores	Pin and chalk mark adjustments on the finished garment so that it will fit the individual customer after alteration.
Marker Maker (D)	Apparel Factories	Make a production cutting layout of all the pattern pieces for a style in an entire size range.
Sketcher (D)	Manufacturers Dressmakers Boutiques	Sketch samples for production and showroom use; sketch samples for record-keeping purposes.
Embroidery Designer (D)	Embroidery Houses	Sketch ideas for embroidery or appliqué designs.
Sample Maker (D)	Manufacturers' Sample Rooms	Sew the first sample; work directly with the designer or assistant designer.
Assistant Designer (D)	Manufacturers	Drape and draft first pattern; supervise sample makers; work closely with the designer.
Dressmaker (D)	Custom Dressmakers Custom Boutiques	Cut and sew a complete garment for an individual customer.
Duplicate Cutter (DP)	Manufacturers Boutiques	Cut duplicates from original sample; cut duplicates in another size range from the original sample.
Duplicate Maker (DP)	Manufacturers' Pattern-making Departments	Sew a duplicate of the first sample, conforming to standard sizes after patternmaker has made the stock pattern; test stock pattern for production purposes.
Grader (P)	Apparel Factories	Proportionately expand and contract the perfected sample — sized stock pattern into patterns for an entire size range.

Advanced Career Opportunities —(continued)

<u>OCCUPATION</u>	<u>PLACES OF EMPLOYMENT</u>	<u>WHAT WORKERS DO</u>
Design Room Trainee (D)	Manufacturers	Are generally helpful in the design room; assist the designer by running errands, sketching, "picking up pins", etc.
Quality Controller (P)	Apparel Factories	Inspect product during various stages of production to ascertain conformance with specifications; notify appropriate supervisor or foreman or return to affected operator for correction.
Patternmaker (DP)	Manufacturers Commercial Pattern Cos.	Develop a perfect garment from the first sample; may have to subtly adjust proportions to fit stock sizes without changing the style of the garment; sometimes work from a sketch.
Production Supervisor (P)	Apparel Factories	Coordinate all production activities of subordinate personnel; determine how job will be performed; train workers and oversee performance.
Instructor Trainer	Apparel Factories	Indoctrinate and train new workers; retrain experienced workers; oversee job performance.
Accessories Designer (LP)	Manufacturers of: Shoes, Handbags, Gloves, Belts, etc. Freelancers	Sketch ideas for accessories.
Designer (D)	Manufacturers Boutiques	Design a new collection of garments every season; sketch ideas, select fabrics and trimmings; supervise the construction of first samples; often work with buyers and travel to stores across the country to promote sales.

THE APPAREL DESIGN AND PRODUCTION PROGRAM

It is expected and suggested that the program in this guide will not be applied to a given situation exactly as outlined. The material is presented to illustrate how a comprehensive apparel design and/or production educational program can be organized. It aims to provide a suggested framework within which such training can be developed.

PROGRAM OBJECTIVES

A job-preparatory program must concentrate on employment objectives if it is to prepare occupationally competent individuals. Its approach must be realistic, pragmatic and must identify with specific competencies needed.

The development of occupational competency has at least six components around which a program should be designed:

1. Training should prepare the individual to be a productive employee in an entry level job.
2. The training, combined with a reasonable amount of work experience, should prepare the individual to advance to positions of increasing responsibility.
3. The training should give the individual an understanding and appreciation of all of the functions operating within the business enterprise.
4. The foundation provided by the training should be broad enough so that the individual can do further study within his field. No program can be considered terminal in the sense that the student stops learning. The further study may be the reading of trade publications, new text references and/or formal education.
5. The technical training should be complemented by other educational disciplines which contribute to the social and personal development of the student. Employers want workers who are not only technically competent, but who have basic mathematical skills, who can communicate with people and who can get along with others.
6. Training should develop the professional attitudes and behavior necessary to secure and hold a job.

The program suggested in this guide is designed in its

entirety to meet these requirements. It has been so designed as to lend itself to modifications and adaptations depending upon competencies to be achieved, time available for instruction, opportunities for employment, special needs and occupational goals of the students enrolled, varying types of educational institutions and their currently existing programs.

DESIRED BEHAVIORAL OUTCOMES

The aim of the program contained in this guide is to enable students to acquire the specific abilities needed for initial employment and to provide the knowledge necessary for career advancement and continuing study.

The suggested program includes a common core of three fundamental background areas of instruction followed by two alternative skill-development options each of which corresponds to the specialized skills and proficiencies needed for employment either as apparel production workers or design personnel. The common core aims to enable students to acquire the following common knowledge:

1. An understanding of fabrics, fibers, fabric construction, and finishes as they affect the design and production of apparel.
2. A comprehension of the apparel production process from design to finished product.
3. An understanding of fashion marketing and promotion as it affects design and production of apparel.

The areas of instruction suggested for apparel design students, as illustrated in the example of a comprehensive design program which follows, aim to provide:

1. A facility in fashion drawing as a means of visualizing original design ideas, including the ability to draw fashion figures with ease and flair, and to accurately represent fabrics and design details.
2. An ability to utilize basic methods of cutting, sewing and pressing in assembling a garment according to industrial standards.
3. A recognition of the relationship of the social and economic conditions in history to the fashions of the times, and the ability to apply this insight to

the designing of modern apparel and accessories.

4. The ability to design apparel and accessories within the limitations imposed by materials and production methods.
5. A proficiency in developing patterns by draping and pattern methods and a working knowledge of pattern grading.

The areas of instruction suggested for apparel production students, as illustrated in the example of a comprehensive production program which follows, aim to provide:

1. A proficiency in the volume production operations of sewing, spreading, cutting, pressing, cut work preparation, finishing and internal work handling.
2. An understanding of fabric utilization as required for marker making.
3. A proficiency in developing patterns by draping and pattern methods and a working knowledge of pattern grading.
4. An appreciation of the system of quality control as it applies to apparel production.

EXAMPLE OF A COMPREHENSIVE APPAREL DESIGN PROGRAM*

<i>Areas of Instruction</i>	<i>Suggested Hours</i>		
	<i>Class</i>	<i>Laboratory</i>	<i>Total</i>
FUNDAMENTAL BACKGROUND			
Basic Textiles			45
Introduction to Apparel Design and Production	25	20	45
Fashion Marketing			45
BASIC SKILL DEVELOPMENT			
Introduction to Fashion Drawing	24	36	60
Garment Construction	19	41	60
CAREER ADVANCEMENT			
Introduction to Pattern Development	39	131	170
Advanced Pattern Development	32	138	170
Grading	45	45	90
Advanced Fashion Drawing	20	40	60
Fashion Design — Past and Present	40	20	60
Accessory Design	15	30	45

*This sample program can be modified in terms of hours and instructional areas to suit the time, facilities, objectives and job goals.

EXAMPLE OF A COMPREHENSIVE APPAREL PRODUCTION PROGRAM*

<i>Areas of Instruction</i>	<i>Suggested Hours</i>		
	<i>Class</i>	<i>Laboratory</i>	<i>Total</i>
FUNDAMENTAL BACKGROUND			
Basic Textiles			45
Introduction to Apparel Design and Production	25	20	45
Fashion Marketing			45
BASIC SKILL DEVELOPMENT			
Introduction to the Cutting Function	8	7	15
Industrial Sewing	28	52	80
Introduction to the Pressing Function	5	7	12
Fabric Lay-up (Spreading)	9	18	27
Fabric Cutting	6	10	16
Garment Pressing	7	10	17
Cut Work Preparation	6	6	12
Finishing	4	4	8
Internal Work Handling	6	3	9
CAREER ADVANCEMENT			
Fabric Utilization (Marker Making)	12	33	45
Quality Control	16	19	35
Garment Construction	19	41	60
Introduction to Pattern Development	39	131	170
Advanced Pattern Development	32	138	170
Grading	45	45	90

*This sample program can be modified in terms of hours and instructional areas to suit the time, facilities, objectives and job goals.

THE PROGRAM AND OCCUPATIONAL RELATIONSHIPS

The relationship of the individual areas of instruction to specific occupations and required competencies is demonstrated in Tables 1 and 2. Table 1 lists by number all of the instructional areas included in both the Apparel Design and Apparel Production programs. Table 2 shows the relationship of these areas to specific jobs. For example, if the occupational objective was that of a Sewing Machine Operator, the suggested areas would be 1, 2, 5. An occupational goal as a Sample Maker would require areas 1, 2, 3, 13, 14, 17, and 18.

The illustrations of these relationships should

facilitate the adaptation of this curriculum and enable the user of this guide to adapt, lift out, or combine the instructional areas in different ways depending upon the level of competence to be achieved, the time available for instruction, and the capabilities, needs and occupational objectives of individual students.

A student completing the entire program in either Apparel Design or Apparel Production would of course have a greater variety of occupational alternatives at the entry job level, and a greater potential for faster and further career advancement.

TABLE 1

Areas of Instruction

D = Design Program

P = Production Program

DP = Design and Production

- 1 Basic Textiles (DP)
- 2 Introduction to Apparel Design and Production (DP)
- 3 Fashion Marketing (DP)
- 4 Introduction to the Cutting Function (P)
- 5 Industrial Sewing (P)
- 6 Introduction to the Pressing Function (P)
- 7 Fabric Lay-up (Spreading) (P)
- 8 Fabric Cutting (P)
- 9 Garment Pressing (P)
- 10 Cut Work Preparation (P)
- 11 Finishing (P)
- 12 Internal Work Handling (P)
- 13 Introduction to Fashion Drawing (D)
- 14 Garment Construction (DP)
- 15 Fabric Utilization (Marker Making) (P)
- 16 Quality Control (P)
- 17 Introduction to Pattern Development (DP)
- 18 Advanced Pattern Development (DP)
- 19 Grading (DP)
- 20 Advanced Fashion Drawing (D)
- 21 Fashion Design — Past and Present (D)
- 22 Accessory Design (D)

TABLE II

Areas of Instruction Needed for Specific Job Preparation

(D) = Design Program

(P) = Production Program

(DP) = Jobs for which preparation can be accomplished in either program.

<i>Job</i>	<i>Suggested Areas of Instruction</i>
Finisher (P)	11
Bundler (P)	2, 10
Bundle Handler (P)	2, 12
Spreader (P)	1, 7
Draper (DP)	1, 2, 5 or 1, 2, 14
Hand Cutter (DP)	1, 4, 15 or 1, 14
Hand Finisher (DP)	1, 5, 6 or 1, 14
Production Cutter (P)	1, 4, 8
Sewing Machine Operator (P)	1, 2, 5
Presser (P)	1, 2, 6, 9
Seamstress (DP)	1, 2, 4, 5, 6 or 1, 2, 14
Tailor's Apprentice (P)	1, 2, 4, 5, 6
Alteration Hand (DP)	1, 2, 3, 4, 5, 6, 17 or 1, 2, 3, 14, 17
Fitter (DP)	1, 2, 3, 4, 5, 6, 17, 18 or 1, 2, 3, 14, 17, 18
Marker Maker (P)	1, 2, 3, 4, 7, 8, 10, 15
Sketcher (D)	1, 2, 3, 13, 14, 20
Embroidery Designer (D)	1, 2, 3, 13, 14, 17, 20
Sample Maker (D)	1, 2, 3, 13, 14, 17, 18
Assistant Designer (D)	1, 2, 3, 13, 14, 17, 18, 19
Dressmaker (D)	1, 2, 3, 13, 14, 17, 18, 19
Duplicate Cutter (DP)	1, 2, 3, 14, 15, 17, 18, 19
Duplicate Maker (DP)	1, 2, 3, 4, 5, 6, 14, 15, 16, 17, 18
Grader (DP)	1, 2, 3, 14, 15, 16, 17, 18, 19
Accessories Designer (D)	1, 2, 3, 13, 14, 17, 18, 20, 21, 22
Designer (D)	1, 2, 3, 13, 14, 17, 18, 19, 20, 21, 22
Design Room Trainee (D)	1, 2, 3, 13, 14, 17, 18, 19, 20, 21, 22
Quality Controller (P)	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 14, 15, 16, 17
Patternmaker (DP)	1, 2, 3, 7, 8, 9, 14, 15, 16, 17, 18, 19
Production Supervisor (P)	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 16, 17, 18

BRIEF OVERVIEW OF AREAS OF INSTRUCTION

Basic Textiles

A survey of textiles with major emphasis on finished fabrics introduces students to fibers, fabric constructions and finishes as they affect the design and production of apparel. The elements in the manufacturing of fabrics are related to fabric hand, appearance and expected performance properties.

Introduction to Apparel Design and Production

An analysis of the various phases of apparel design and production introduces the student to the career possibilities in this area. The processes of design, costing, patternmaking, cutting, sewing, finishing and shipping are discussed. In addition, the student becomes familiar with the basic terminology of the fashion business.

Fashion Marketing

A study of the marketing process in the fashion industry and an insight into the marketing concept and approach. Suggested teaching content includes the demographics of consumer fashion demand, the customary channels of distribution, and the major marketing policies and strategies of enterprises involved in the production and distribution of fashion products.

Introduction to the Cutting Function

A survey of the many functions performed in the cutting department of an apparel manufacturing organization. The fundamental concepts of marker making, spreading and cutting are explained. The student acquires the basic skill of cutting by hand.

Industrial Sewing

Upon completion of this area of instruction, students will know how to operate different kinds of industrial sewing machines and attachments. Students learn to identify, know when to use, and how to produce different kinds of seam constructions. Various hand sewing operations are also taught.

Introduction to the Pressing Function

A study of the many functions performed in the pressing department of an apparel manufacturing organization. The fundamental concepts of garment pressing are explained with emphasis on pressing quality. The student acquires the basic skill of pressing with a hand iron.

Fabric Lay-up (Spreading)

Students learn how to spread fabric in many different ways and how to operate and control different kinds of fabric spreading machines. They will also be capable of properly manipulating fabric for shade and damage control.

Fabric Cutting

Students learn how to adjust and operate industrial cutting machines. They will evaluate them and use them in different cutting manipulations.

Garment Pressing

Teaches students how to maintain and operate pressing equipment, including both hand irons and various types of pressing machines. Emphasis is placed on means of obtaining quality pressing.

Cut Work Preparation

Students learn how to prepare cut work for sewing. The principles and techniques of assorting, ticketing and bundling are both discussed, demonstrated and practiced.

Finishing

Introduces the student to the principles and techniques of garment trimming, ticketing, folding, pinning and packaging. Emphasis is placed on developing manipulative skill in these job tasks.

Internal Work Handling

Gives the student the basic information necessary to perform the simplest yet most important job task in an apparel factory — the storing, dispatching and supplying of work in process, and the supplying of equipment and trimmings for work in process.

Introduction to Fashion Drawing

The professional approach to fashion drawing is stressed. No unusual artistic talent or previous training is required to learn to draw fashion sketches that accurately represent design details. Students work in pencil, felt-tipped pen, and water colors as they learn to draw the fashion figure with ease and flair.

Garment Construction

Students become familiar with the basic procedures of garment construction including cutting, hand and machine sewing, and pressing as practiced in manufacturer's sample rooms and dressmaking establishments. Emphasis is on techniques of complete garment assembly rather than the particularized skill development required for volume production work.

Fabric Utilization

Students study how to make the different kinds of markers used in the apparel industry. Fabric utilization and the quality aspects of marker making are stressed. Discussion of marker duplicating systems is included.

Quality Control

Students learn the principles and techniques of apparel quality control. All aspects of quality apparel manufacture from raw material to finished product are discussed. Techniques of the job tasks involved in implementing quality as well as those for finished product quality evaluation are explored.

Introduction to Pattern Development

The methods of draping and pattern drafting are combined in an integrated study of pattern development that approximates as closely as possible the patternmaking practices followed in industry. Students drape basic patterns and learn to manipulate them to achieve numerous design variations. The construction of a sample garment provides an opportunity to view the function of pattern development in relation to design and construction.

Advanced Pattern Development

The more complex problems of draping and pattern drafting are explored. Included are drafting basic patterns from measurements, and introduction to tailored garments, and handling fabrics for soft draping and more intricate effects. The sample garment serves to provide the student with the opportunity for practical application of the more challenging material covered.

Grading

Provides a firm foundation upon which students can build professional competence in grading when they enter the industry. Entire garment units provide the problems in grading, thus approximating as closely as possible the various challenges that are found under normal working conditions. Within each module, emphasis is placed on basic principles that apply to a wide range of situations.

Advanced Fashion Drawing

An area of instruction designed to develop additional skill in rendering the fashion figure. A wide variety of techniques, commonly used by fashion designers and illustrators, is introduced. Emphasis is placed on clearly defined representation of various types of fabrics and materials used in fashion. Students are taught to draw boys and girls of all ages for children's wear design, and are introduced to the male fashion figure for the purpose of designing men's apparel.

Fashion Design: Past and Present

The origin and development of costume is traced from the beginning of history to the present. Throughout the area of instruction, the evolution of costume is related to the prevalent social and economic conditions of the times. Laboratory assignments introduce the student to the technique of designing apparel by drawing inspiration from the fashions of the past. Emphasis is placed on adapting relevant design features so that they function within the structure of modern utility and technology.

Accessory Design

Introduces the major areas of accessory design. Handbags, gloves, belts, scarves and shoes are analyzed in terms of construction, materials, and pictorial representation. The future designer is trained to sketch ideas with clarity and precision, so that production technicians can easily follow the sketches and produce a first sample.

GENERAL PROGRAM CONSIDERATIONS

There are many administrative factors to be taken into consideration before a job-preparatory program is undertaken or expanded. Questions such as the following require affirmative answers:

1. Does such a program meet a manpower and educational need in the State or community and at a reasonable cost?
2. Is the present faculty, if any, qualified or can qualified faculty be obtained?
3. Will there be adequate financial support to provide the program with the necessary facilities and equipment and to maintain it by providing continuing support for the proper instructional resources necessary for high quality programs?
4. Can provisions be made for effective guidance and placement services?

SURVEY OF NEEDS

The basic purpose of this or any other job-preparatory program is to prepare students for advantageous initial employment. It is obvious that a program of this type should not be undertaken unless:

1. There is every indication that it fills an educational or manpower need in the community or State and at a reasonable cost;
2. There is some assurance, as determined by a study, that there are advantageous and meaningful entry-job opportunities for enrollees of the program.

Those who believe that a program of this type may be needed in their institution should begin with a comprehensive regional, State and/or local study. It should be made with the help of people acquainted with the apparel industry needs in apparel design and/or apparel production. Such a survey is necessary to catalog the educational needs, to define community support, to evaluate available student population, and to form a basis for a decision as to whether or not to offer the program in whole or in part. Furthermore, no program should be undertaken unless there is strong indication that there will be a continuing need.

FACULTY

The effectiveness of a job-preparatory curriculum depends to a great extent on the competence and enthusiasm of the teaching staff. It is important for instructors in this program to be occupationally competent through bonafide wage earning experience in relevant occupations and to have had, or to be given, instruction in the techniques of teaching. Occupationally experienced teachers add credibility and realism to a program.

The problem of identifying and recruiting qualified instructors is a very real one. If vocational or technical teachers with an understanding and appreciation of the industry are unavailable within the institution, some instructors may be recruited from industry who are available for teaching on a part-time basis. There are often industry professionals who are eager and able to teach 2 or 3 hours a day, or some other agreed upon schedule.

Also, some individuals who have retired from industrial positions and who are physically and mentally alert may be recruited as part-time instructors for areas of work in which they have had a successful experience.

Experience has shown that graduates of technical schools, who have acquired suitable employment experience, often become excellent teachers in job-preparatory curriculums. Persons with this background are more likely to understand the objectives, values and unique instructional requirements of vocational-technical education and often bring to the program the kind of enthusiasm which has meaning to the students they meet.

Programs of an occupational nature need to be kept up-to-date if they are to be effective in preparing people for employment. In-service training programs should be developed and used to help instructors with teaching techniques, use of instructional materials, planning instructional procedures, evaluation procedures, etc. and to update instructors in terms of new industry developments. Faculty members should also be encouraged to participate as active members of professional associations. Through their publications and meetings, such organizations serve as important sources of information for new instructional materials and continuing reports of new processes, concepts and developments related to their technologies. A list of these trade associations and professional societies can be found in the Appendix.

STUDENT ENROLLMENT AND SERVICES

It is recommended that there be some system for enrolling students who have a reasonable expectation of succeeding in all or a meaningful part of the program, since the effectiveness and success of the program will ultimately be measured by the job-performance of its enrollees.

Students entering the Apparel program should be manually dextrous, be able to accurately discern colors and enjoy working with fabrics. A high degree of interest and motivation is desirable. Students who are specifically interested in Apparel Design should show some evidence of creative talent. This might be in the form of some type of their own work to be submitted for evaluation or in the form of an entrance examination in drawing and draping. However, an aptitude for apparel design is most difficult to ascertain and many students will evidence or develop creative ability as they attain skills in the program.

General school records, aptitude test results and information on exploratory experiences and activities can be useful tools in assisting potential students in making the decision on whether to enter this program or not.

Guidance and Counseling Services

Guidance and counseling are important in order to bring into the program students who have a basic understanding of the demands and rewards of the occupation and who have the potential for developing the competence and confidence to meet the demands and achieve the rewards.

In view of individual differences, diverse occupational objectives, the variety of instructional areas and the levels of training opportunity, the importance of informed and continuous counseling cannot be over-emphasized. Teachers, coordinators and guidance personnel must assume responsibilities for:

1. Aiding students in their selection of educational and occupational objectives consistent with their interests and aptitudes.
2. Providing for assessment and recognition of each student's competencies achieved or developed in previous educational programs and/or employment experiences.
3. Assisting students in a continual assessment of their progress toward their individual occupational goals.
4. Assisting students in revising their educational objectives if other interests and vocational goals emerge as students develop.

Students should also be involved in determining how

much job preparation they want, how much they will undertake and for how long. After completing their first goals, they could then be encouraged to participate in progressive levels of job preparation in order to broaden employment potential and satisfy maturing occupational choices.

Placement and Follow-Up Services

Effective occupational preparation is impossible if the school feels that its obligation ends when the students graduate. Placing the students on the job and following up their successes and failures provide the best possible information to the school on its own strengths and weaknesses.

An excellent placement record is important in attracting new enrollees. Also, a school which is successful in placing its students is more likely to have motivated students than a school which divorces itself from the placement responsibility.

Follow-up of employed graduates should be utilized to determine:

1. Graduates' success or failure in employment
2. Effectiveness and value of the program
3. Possible revisions to be made in the program

Competency Certification

In industries such as the fashion industry where employment certification is not prescribed, certification could be considered informal. Student records could be maintained in terms of the degree to which the student is able to perform one or more of the competencies needed for identified occupations. Another factor to be considered for competency certification is employer evaluations of the student's performance in cases where a cooperative training experience is provided.

STUDENT ORGANIZATIONS

Student clubs that are related to an instructional program, should be encouraged and sponsored by faculty members. Groups such as these strengthen relationships among students, and develop leadership potential and an ability to work with other people. They also provide opportunities for students with similar interests to select and discuss areas about which they would like further information, and to invite guest speakers of their own choice.

These student groups should be directed by the stu-

dents but faculty assistance and advice must be available whenever needed. To be encouraged also are affiliations with relevant student organizations that are national or statewide in scope, such as the Distributive Education Clubs of America.

ADVISORY COMMITTEES

The success of job-preparatory programs depends greatly upon the formal and informal support of industry advisory committees. Such committees serve without pay, as interested citizens.

The committee can be important as an aid in establishing, maintaining and/or evaluating the program. Members can also be helpful in recruiting faculty, placing graduates, recommending, and in many cases, securing donations of instructional equipment and materials, providing assistance and facilities for field trips, assisting with training stations for cooperative training and the like.

The committee should be made up of representatives of industry, trade associations, related business and industry and, where appropriate, local labor organizations in the community, area or State for which trainees are being prepared. Committee members should be appointed on a rotating basis so that the duty will not become a burden to any individual member. Rotating memberships will also give other interested people an opportunity to serve. The average committee usually consists of about 12 to 20 members. These members should be invited and appointed by the responsible educational authority. The duties and responsibilities of the advisory committee should be clearly understood so that maximum service can be rendered.

For further information about advisory committees see American Vocational Association, *The Advisory Committee and Vocational Education*, Washington, The Association, 1969 and Riendeau, Albert J., *The Role of the Advisory Committee in Occupational Education in the Junior College*, Washington, American Association of Junior Colleges, 1967.

COOPERATIVE TRAINING

A good way to develop employment skills is through actual employment. To the extent that the labor market allows, cooperative work training should be a regular part of a job-preparatory program. It may be scheduled for a block of time planned for full-time employment during peak business periods or for a period of time during which part-time school attendance is alternated with part-time employment.

When employment is used, it should be considered an essential element in the educational process and should be related to the field of study in which the students are

engaged. For example, many of the learning experiences suggested in this guide can be adapted for completion at the students' employment sites.

When students test and apply their school-learned theory in a work situation, study becomes more meaningful. Just as important, the student has an opportunity to learn the importance of reliability, cooperation, judgment and other qualities associated with the successful worker. Through this exposure to the real world of work, students' career choices are stimulated and shaped. Should they find through their work experience that they are not fitted for a specific area of work, they may decide to change their field of study. This decision may prevent them from wasting their time on a misguided career choice.

Specific employment is obtained, as circumstances permit, by a teacher-coordinator or a placement office within the educational institution. The institution regards the cooperative training technique as an integral part of the program as a whole. It is not regarded primarily as an earning opportunity, although all students are paid wages that are commensurate with those paid to beginning workers in the particular job for which they are employed. Job evaluation reports are submitted to the school coordinator by the employer and are then discussed with the student. Work reports are submitted by the students to the classroom instructor(s) who utilize them to reinforce instruction.

The cooperative training technique offers important advantages to students, to the school and to employers. It offers students an opportunity to gain the type of experience that will make them more desirable as employees. As a result of their employment experience with a particular establishment, many students are offered permanent positions with that organization upon completion of their schooling. Regardless of their next steps, students establish employment records which are extremely important for future reference.

Cooperative education also provides opportunities for the educational institution to maintain close contact with employers. This contact becomes a valuable two-way channel of communication which helps the educational institution to keep its knowledge of specific employment needs up-to-date, and at the same time keeps employers acquainted with, and involved in, the program of the institution.

Ideally students should be exposed to work experience after they have acquired some of the basic skills required for entry jobs. At this point, they can render some meaningful service to the employer and in turn gain a realistic view into their chosen occupation. They will then be able to approach further study with a better understanding of the actual working conditions and career opportunities in their field.

Additional expenditures of time and money are necessary to locate work training stations and to supervise and counsel the students who are assigned to them. Few expenditures, however, will bring a bigger return in linking education with productivity and in making schools effective in preparing young people for meaningful careers.

Specific suggestions for using the cooperative plan are available from vocational education directors in State Departments of Education.

SAFETY

Principles of safety should be taught and stressed as an integral part of each instructional area that involves handling of tools and equipment. By emphasizing careful procedures and by observing the normal safety practices, many dangers can be avoided.

The importance of protecting human life and limb is paramount, but students also need to learn good work habits and to develop a pride in workmanship. Teaching proper care and use of equipment is more important than teaching how to repair it as a result of negligence.

INSTRUCTIONAL EQUIPMENT

In determining and selecting instructional equipment, the need for every item should be established. Instructors should recognize that the purpose of laboratory and/or learning experiences is to teach or reinforce principles and basic skills. The latest and most expensive equipment is not always necessarily the best for instructional purposes. In many cases, simpler equipment may be more effective because it represents only the essentials. Equipment, however, should reflect current industry usage.

The possibility of getting donations of equipment from industry resources should be investigated by the local school or by the State vocational education offices. Advisory committees can be helpful in this area.

The instructional equipment and facilities suggested in this guide are planned for classes of approximately 20 to 24 students.

The ingenuity of the instructor will play a major part in governing the selection and cost of the instructional equipment. Suggestions for desirable facilities, specific equipment, layouts and approximate costs are discussed in another section.

INSTRUCTIONAL MATERIALS AND CLASS OUTPUT

The specific instructional materials that are suggested for this program are included in the instructional out-

lines and are also discussed in the section on *Facilities, Equipment and Costs, and Instructional Supplies*. The following are general suggestions for sources of supply for instructional materials and possible utilization of class output which can have financial advantages to the program and can also enhance instruction.

1. Possible sources of supply without costs
 - a. Brochures from textile producers, apparel producers, manufacturers and suppliers of equipment and trade associations are obtainable free of charge.
 - b. Donations and/or loans of fabrics and garments for class demonstrations and learning-experience activities are usually obtainable from local manufacturers. Another source of supply for garments might well be donations of unclaimed garments by local drycleaning shops.

2. Possible utilization of class output

Where feasible and appropriate, it is suggested that work activities be simulated in the classroom and that the economic value of class output be considered. The utilization of class output should be subject to guidelines established in consultation with the local advisory committee in order to avoid competitive factors.

For example, in an apparel program, production situations could be developed in the industrial sewing instructional area whereby apparel is produced in quantity under factory-like conditions in the classroom and sold locally at cost or slightly above costs. This would give students a motivating factory-related work experience and would create a regenerating fund that would provide the necessary materials to maintain this type of valuable learning experience.

LIBRARY SUPPORT

A school library is the major source for the reading and reference facilities which are necessary to make an educational program fully effective. Instructors must recognize their responsibility for developing and enriching the resources of the library to support their program and for stimulating student use of the library. Assignments and projects calling for the use of the library enables the students to understand the research resources in libraries and how they relate to their present career choice.

The library should house trade journals, pamphlets, basic references, current and pertinent books and periodicals. Keeping abreast of new equipment and pro-

cedures is most important. Many new and different fibers are continually introduced in fabrics for apparel. Such non-textiles as plastics, leathers and furs are also used for garments. One quickly realizes the importance of good library support to keep faculty and students updated on new product technologies.

A list of periodicals that report new developments in products, equipment and procedures can be found in the *Bibliography* of this guide. It is suggested that the library subscribe to these periodicals for the use of faculty and students alike.

TEXTBOOKS, REFERENCES, AND AUDIOVISUAL AIDS

Due to the dynamic nature of the industry, techniques, procedures and product technologies are constantly changing. Textbooks, references and visual aids must be reviewed continuously in light of new developments.

The texts and reference materials that are suggested in the instructional area outlines should be examined by the instructor and analyzed for content and relevancy; newer and more pertinent ones should be substituted as they become available. The information needed to cover a particular area of instruction is more often than not,

unavailable in texts; hence the absence of suggested texts in some areas and the multiple listing of references in others.

In many areas of instruction, it will be necessary for the teacher to develop his own teaching materials. Reading references must usually be augmented by mimeographed material reproduced by the instructor from current materials in trade publications and/or by brochures, bulletins and reports from trade associations and from business firms within the fashion industry itself.

Audiovisual aids can be a great help in teaching but must be previewed before use in order to determine their timeliness and pertinency to a teaching objective. Only a few have been listed in this guide because changes in techniques and procedures tend to make films obsolete in a relatively short time.

It is expected and hoped that a skillful instructor will make liberal use of merchandise samples, slides, transparencies, charts, industry materials and other visual aids that illustrate and visualize technical aspects of the content that is being taught. These again must usually be collected and/or prepared by the individual instructor. They must also be updated regularly in order to keep them current. Some suggestions for visual aids are included in the instructional outlines. The ingenuity of the instructor and/or department head will play a major part in the preparation and use of instructional aids.

OUTLINES OF AREAS OF INSTRUCTION

The outlines of the areas of instruction which follow contain the subject matter to be included, the behavioral objectives and brief instructional guidelines. They are organized according to teaching modules each of which contains suggestions for teaching content and student learning experiences. Suggested hours, prerequisites, approaches for student evaluation, and teaching resources are also included for each area of instruction. It is expected and recommended that these materials be modified to suit the needs of local situations and to take advantage of the special interests, capabilities and ideas of the teaching staff in a particular institution.

The importance of flexibility in varying behavioral objectives to meet the needs of individual students and in allowing individual students sufficient time to develop at least one employable skill cannot be over-emphasized. While the successful completion of all objectives for each area of instruction and for the program in its entirety is desirable, this is not attainable by all students. It must further be remembered that skill development can only be "learned-by-doing" and that what one student can learn in one week may take three weeks for another.

The role of the teacher in education has changed from being primarily an information giver in large group sessions to functioning as a resource person, a motivator, a diagnostician, and an organizer—in sum, a learning manager. It is incumbent upon the teacher to:

- Assist the individual student's present skills and potential
- Identify those behavioral objectives which individuals can attain
- Encourage students to acquire at least one if not more marketable job skills, allow them sufficient time to do this, and emphasize the importance and interdependence of all operations in an employment setting
- Individualize desired behavioral outcomes in order to obtain a sense of accomplishment for all students in the class
- Encourage and motivate all students to continually strive for higher goals

Although individualizing instruction is not easy, it is necessary if the overall objectives of job-preparatory programs are to be achieved.

The suggestions for evaluation that are included in the outlines offer but a few approaches. Regardless of the evaluation techniques that are used and of their frequency—whether they be written, oral, or performance assessments—evaluation should be in terms of the desired behavioral objectives. In addition, students should be made aware of all objectives and kept aware of their own performance and progress as it appears to the instructor.

Fundamental Background Instruction

BASIC TEXTILES

Prerequisites: *None*

Suggested Hours: 60

Behavioral Objectives

This area of instruction should enable students to:

1. Use the terminology that is identified with the textile industry.
2. Know fabric characteristics as they relate to appearance, hand, expected performance, and end-product use.
3. Perceive the relationship between fiber properties, fabric types, and end-product use.
4. Understand the major systems of yarn manufacturing and their affect on the properties of finished fabrics.
5. Comprehend the methods of fabric construction that determine the characteristics of fabrics.
6. Be familiar with the coloring methods applied to fabrics.
7. Be familiar with the various types of processes used on textile materials.
8. Be familiar with federal laws and regulations as they apply to fabrics.

Instructional Guidelines

This area of instruction is an introduction to textiles with major emphasis on finished fabrics. It is suggested that a representative cross-section of fabric swatches be distributed to the students and that frequent reference be made to these samples in order to illustrate various teaching points. Traditional fabric types should comprise the major portion of the student's samples and the classical names for these fabrics should be employed. Fabric manufacturing should be related to fabric hand, appearance, and expected performance, and these in turn should be related to end product use. The study of finished fabric characteristics should be reinforced as the student progresses through the study of the various manufacturing elements that affect the end product.

Teaching Modules

Suggested Hours

I. Introduction and Orientation	3
II. Fabric Characteristics	6
III. Fibers	9
IV. Yarns	6
V. Methods of Fabrication	15
VI. Dyeing and Printing	12
VII. Finishing	6
VIII. Federal Regulations	3
Total Hours — — —	60

I. INTRODUCTION AND ORIENTATION

Teaching Content

- A. What Are Textiles
 1. Definition of fiber
 2. Definition of yarn
 3. Definition of fabric
- B. Concept of Basic Textile Constructions
 1. Fiber type
 2. Yarn type
 3. Method of fabrication
 4. Method of coloring
 5. Finish
- C. The Flow of Textiles (relationship between levels and function of each)
 1. Fiber producer
 - a. Natural
 - b. Man-made
 2. Yarn mill
 - a. Spinning
 - b. Throwing
 3. Fabric mills
 - a. Weaving
 - b. Knitting
 - c. Tufting
 - d. Other
 4. Converters and their function
 5. Dyeing, printing and finishing plants
 6. End product manufacturers
 - a. Apparel

- b. Home Furnishings
 - c. Domestics
 - d. Industrial
7. Retailers

Learning Experiences

1. Have students examine the apparel they are wearing and distinguish between fiber, yarn and fabric.
2. Have students make a list of business enterprises in the local area that are involved in different levels of production and distribution.
3. Show film, *Cloth: From Fiber to Fabric or Textiles For Everyone*.

II. FABRIC CHARACTERISTICS

Teaching Content

- A. Describing Fabric Appearance
 1. Color
 2. Pattern
 3. Texture
- B. Describing Fabric Hand
- C. Describing Fabric Weight
 1. By end product use
 2. By typical industry terminology
- D. Determining Face of Fabric
 1. Major characteristics
 2. Designer choice
 3. Factors limiting designer
- E. Fabric Traditional Names

Learning Experiences

1. Have students go through various fabrics in the bundle of fabric swatches. Each fabric should be described, named if a traditional name is known for that fabric, and the face identified.
2. Assign students to find three traditional fabrics in their homes and classify according to fabric name, fibers used, description of the fabric and the end product.
3. Have students see how many different fabrics they can identify by traditional fabric name in their home.

III. FIBERS

Teaching Content

- A. Classification of Fibers
 1. By origin
 2. By generic class
 3. By filament or spun
- B. Properties of Fibers
 1. Related to processing

2. Related to fabric appearances, hand, and performance
3. Major properties of each generic class

C. Modification of Fibers

1. Chemical variations
2. Modified physical shape
 - a. Length
 - b. Cross-sectioned

D. Methods of Fiber Identification (limitations and value of each)

1. Burning and other simple tests
2. Microscopic examination
3. Fiber identification stains
4. Chemical solubility: quantitative identification

E. Grades of Fibers

1. Cotton
 - a. Staple length
 - b. Grade
2. Wool
3. Man-made fibers

Learning Experiences

1. Demonstrate some simple tests such as the burning test, the wet-dry strength test, a simple acid test, to identify the fiber content of several unknown fiber fabrics and have students perform similar tests.
2. Have students examine their own wardrobes and make a chart showing the fiber content and the description of the end-product item. Room should be left on the chart to add information about the other elements of fabric manufacture that will be presented in this area of instruction.
3. Arrange a field trip to a fiber producer, cotton gin, cotton or wool warehouse, or the opening room of a mill during this module.
4. Show and discuss film: *The Way It Is With Man-Made Fibers*.

IV. YARNS

Teaching Content

A. Types of Yarns and Properties of Each

1. Spun
 - a. Cotton system
 - b. Wool system
2. Filament
3. Textured filament
4. Stretch yarns
5. Novelty yarns
6. High bulk yarns
7. Ply yarns

B. Twist in Yarn

1. Direction
 2. Amount
 3. Importance and effect
 4. Relation to fabric type
- C. Yarn Numbering Systems
1. Relationship to weight
 2. Major systems used
 - a. Denier: rule of denier
 - b. Count: rule of count
 - c. Tex: rule of tex number
- D. Yarn Quality Factors
1. Uniformity
 2. Neppiness
 3. Fuzziness
 4. Strength

Learning Experiences

1. Using a yarn of known size, have students approximate the yarn size of several yarns of unknown size. These may be taken from fabric samples given to the students and the effect of yarn size on the fabric hand and appearance can be discussed.
2. Select various fabric samples and have the student identify the quality factors of the yarns used, the type of yarn, and the relationship between the yarns and the fabric appearance and hand.
3. Have students refer back to the chart begun in the module on fibers and add to each item information about the yarn and its effect on the finished product.
4. Show and discuss film: *Yarns Used in Making Cloth*.

V. METHODS OF FABRICATION

Teaching Content

- A. Woven Fabrics
1. Loom motions
 2. Woven fabric terminology
 3. Basic weave formation
 4. Special weave effects
 - a. Leno
 - b. Pile
 - c. Dobby
 - d. Jacquard
 5. Fabric count
- B. Knitted Fabrics
1. How knit fabrics are formed
 - a. Weft knitting
 - b. Warp knitting
 2. Knitted fabric terminology
 3. Basic weft knit machines
 - a. Jersey

- b. Rib
 - c. Links
 4. Basic warp knit machines
 - a. Tricot
 - b. Raschel
 5. Fabric type produced on each of above machines
 6. Characteristics of knit fabrics
- C. Tufted Fabrics
1. How formed
 2. End-products in current use
 3. Characteristics
- D. Non-woven Fabrics
1. How formed
 2. End-products in current use
 3. Characteristics
- E. Other Fabrication Methods
1. Lace
 2. Braid

Learning Experiences

1. Arrange a field trip to local mills that either weave, knit, tuft, or produce non-wovens and/or show and discuss film: *Construction of Cloth*.
2. Have students identify the fabrication method employed to produce the fabrics in their swatch bundle.
3. Have students refer to the chart started in the module on fibers and add information on the fabrication method and its effect on the finished fabric.

VI. DYEING AND PRINTING

Teaching Content

- A. How Fabrics are Colored
1. Solution dyeing
 2. Chemical reaction with dyestuff
 3. Resin bonded pigments
- B. Properties of Dye and Fiber Relationships
1. Affinity
 2. Relative cost
 3. Color fastness
 4. Metamerism
 5. Availability of shades
- C. Major Dye Classes in Current Use
1. Fibers on which each is used
 2. Properties of each class
- D. Colorfastness
1. Colorfastness and end use
 2. Simple tests
- E. Methods of Dyeing

1. Recognition of each

- a. Stock
- b. Top
- c. Yarn
- d. Piece

- 1) Cross dye
- 2) Union dye

2. Reason for each

F. Methods of Printing

- 1. Roller
- 2. Screen
 - a. Hand
 - b. Machine
 - c. Rotary
- 3. Heat transfer
- 4. Other methods

G. Types of Prints and Recognition

- 1. Direct
- 2. Discharge
- 3. Resist
- 4. Blotch
- 5. Overprint
- 6. Duplex
- 7. Flock
- 8. Burn-out
- 9. Warp

H. Comparison of Wet-Process Prints and Pigment Prints

- 1. Processing steps
- 2. Cost
- 3. Properties of each

Learning Experiences

- 1. Have students use a vegetable such as beets, onion, cabbage, etc. to prepare their own dyes. This is done by boiling the vegetable for a long period of time and then straining the solution. Then the students can try to dye a cellulose fiber, a protein fiber, and a synthetic fiber in the dye they made. These dyed samples can then be tested for color-fastness to light and laundering if the equipment is available.
- 2. Have students identify the method of coloring used on a variety of samples from the fabric bundles.
- 3. Have students refer to the chart begun in the fiber module and add the information on method of coloring.

VII. FINISHING

Teaching Content

A. Purpose of Finishing

- 1. Alteration of hand
- 2. Alteration of appearance
- 3. Creation of performance characteristic

B. Nature of Finishing

- 1. Mechanical processes
- 2. Chemical additives

C. Major Types of Finishes and Fabrics on Which Used

- 1. Preparatory finishes
 - a. Shrinkage control
 - b. Bleaching
 - c. Singeing
 - d. Others
- 2. Basic finishes
 - a. Calendering
 - b. Napping
 - c. Brushing
 - d. Filling
 - e. Mercerizing
 - f. Others
- 3. End-use finishes
 - a. Flame retardants
 - b. Water repellents
 - c. Stain repellents
 - d. Permanent press
 - e. Others

Learning Experiences

- 1. Using treated and untreated samples of similar fabrics, demonstrate a water repellent finish and a flame retardant finish.
- 2. Have each student identify the probable finishes employed on ten different samples from their fabric bundle.
- 3. Refer, again to the chart begun in the fiber module and have the students add the information on visible or tactile finishes and expected finishes.

VIII. FEDERAL LAWS AND REGULATIONS

Teaching Content

A. Fiber Labelling Laws

- 1. Wool Products Act
- 2. Textile Fiber Products Identification Act
- 3. Historic reasons for legislation
- 4. Requirements of laws
- 5. Definitions of terms
 - a. Virgin or new fiber
 - b. Re-processed fiber
 - c. Re-used fiber
- 6. Advertising requirements

B. Flammability Laws

1. History
2. Current standards and test methods
3. Outlook for additional standards in future.
4. Effect on textile industry

C. Care Labelling Regulations

1. History
2. Current status
3. Requirements
4. Standard and test methods

Learning Experiences

1. Have students bring in labels, or advertisements which feature labels, for evaluation and discussion of contents.
2. Using special, incorrectly prepared labels, have students identify the illegal labels and write them correctly.

Suggested Evaluation

1. Given a set of swatches, students are evaluated on their ability to recognize 40-50 basic fabrics by:
 - a. Classic name
 - b. Method of construction
 - c. Type of yarn used
 - d. Finishes where apparent
 - e. Appropriate end-uses
 - f. Expected performance of the fabric
2. Students are evaluated on their ability to do a cloth count of either a woven or knitted fabric.
3. Students can demonstrate their awareness of laws relating to textiles by documenting information provided by a salesperson or clipping news items.

Teaching Resources

TEXTS AND REFERENCES

Cowan, M.L. *Introduction to Textiles*
 Hall, A.J. *The Standard Handbook of Textiles*

Hollen, N. and J. Saddler. *Textiles*
 Joseph, M.L. *Introductory Textile Science*
 Linton, G.E. *Applied Basic Textiles*
 Potter, M. and B. Corbman. *Textiles: Fiber to Fabric*
 Stout, E.E. *Introduction to Textiles*
 Wingate, I. *Textile Fabrics and Their Selection*

PERIODICALS

American Fabrics
Daily News Record
Modern Textiles

AUDIOVISUAL AIDS

Cloth: Fiber to Fabric. 17 min., 16mm color film, sound.
 Encyclopedia Britannica, Education Corporation, 425 N. Michigan Ave., Chicago, Ill. 60611

Construction of Cloth. 25 min., 30 color slides with written commentary and 20 fabric swatches keyed to program.
 Fairchild Visuals, 7 East 12th St., New York, N.Y., 10003

Introduction to Textiles. 30 min., 32 color slides with written commentary and 18 fabric swatches keyed to program.
 Fairchild Visuals, 7 East 12th St., New York, N.Y., 10003

Yarns Used in Making Cloth. 25 min., 32 color slides with written commentary and 22 fabric swatches keyed to program.
 Fairchild Visuals, 7 East 12th St., New York, N.Y., 10003

Textiles for Everyone. 15 min., color filmstrip, sound.
 American Textile Manufacturers Institute, 1501 Johnston Building, Charlotte, N.C. 28200

The Way It Is With Man Made Fibers. 27 min., 16mm color film, sound.
 E.I. DuPont de Nemours and Co., Product Information Section, Textile Fibers Dept., Centre Road Bldg., Wilmington, Delaware

INSTRUCTIONAL SUPPLIES

- Swatch bundles (as described in Instructional Guidelines)
- Fabric labels
- Samples of current fabrics
- Testing equipment and supplies

INTRODUCTION TO APPAREL DESIGN AND PRODUCTION

Prerequisites: *None*

Suggested Hours: 45

Behavioral Objectives

This area of instruction should enable students to:

1. Understand the general structure of the apparel industry.
2. Become familiar with the function of the designer.
3. Gain insight into the patternmaking process.
4. Use the terminology that is identified with the apparel industry.
5. Know how garments are cut for mass production.
6. Become aware of the various elements of industrial sewing.
7. Become familiar with the finishing and distribution of apparel.
8. Understand the elements that affect the costing of apparel.
9. Understand quality factors in a garment.

Instructional Guidelines

This area of instruction is introductory in nature. It is designed to give students, planning a career in the fashion industry, an overview of apparel production that will help them to see themselves and their job in relation to the product with which they are involved. The various phases of production are analyzed. The processes of design, costing, patternmaking, cutting, sewing, finishing and shipping are presented.

In addition, the student is introduced to the basic terminology of the fashion business. It is suggested that basic material be presented with the full use of visual aids. For example, in presenting the lesson on basic terminology, visuals of the various style details are essential for comprehension. Hands-on learning experiences will give the student an opportunity to explore and become aware of industry methods in design and production. These activities are so struc-

tured that the results of most projects serve as a basis for future problem solving.

Teaching Modules

	Suggested Hours	
	Class	Laboratory
I. General Overview of the Industry	2	1
II. Design	5	6
III. Patternmaking	4	8
IV. Basic Terminology	4	0
V. Cutting	2	1
VI. Sewing	2	1
VII. Finishing and Distribution	2	1
VIII. Costing	2	1
IX. Control Functions	2	1
Total Hours — — —	25	20

I. GENERAL OVERVIEW OF THE INDUSTRY

Teaching Content

- A. History of Apparel Manufacturing in the United States
 1. The Industrial Revolution and the Civil War
 2. Skilled immigrants
 3. Sweat shops
 4. Unions
 5. Industry expansion
 6. Modern manufacturing
 - a. Vertical set-up from fiber to finished product
 - b. Decentralization
 - c. Conglomerates
- B. The Functional Structure of an Apparel Manufacturing Company
 1. Administration
 2. Styling and design
 3. Sales
 4. Production
 5. Shipping and receiving
 6. Purchasing
 7. Marketing and distribution

C. Major Specializations in the Industry

1. Women's and children's clothing
 - a. Designer
 - b. Sportswear
 - c. Coats and suits
 - d. Dresses
 - e. Sleepwear, loungewear and robes
 - f. Lingerie and foundations
 - g. Knitted outerwear
 - h. Evening gowns
 - i. Bridal
 - j. Maternity
 - k. Uniforms
 - l. Furs
2. Men's and boys' clothing
 - a. Tailored clothing
 - b. Sportswear
 - c. Slacks
 - d. Shirts
 - e. Work clothing
 - f. Knitted outerwear
 - g. Underwear
 - h. Sleepwear and robes
3. Accessories
 - a. Shoes
 - b. Handbags
 - c. Scarves
 - d. Millinery
 - e. Men's and boys' furnishings
 - f. Jewelry

D. Seasonal Lines

1. Spring
2. Summer
3. Transition (early fall—back to school)
4. Fall
5. Holiday and cruise

Learning Experiences

Have students set up a simulated company and discuss its operation. Include references to:

1. Geographical location of company
2. The functional departments
3. Description of the product
4. Specific items produced for each season

II. DESIGN PROCEDURES

Teaching Content

A. The Design Room: Who Works There?

1. Designer
2. Sketcher
3. Assistant designer
4. Sample maker
5. Finisher

6. Model

7. Design room trainee

B. Size Ranges

1. Infants'
2. Toddlers'
3. Children's
4. Boys' and girls'
 - a. Slim
 - b. Regular
 - c. Chubby
5. Sub-teens'
6. Young juniors'
7. Junior petites'
8. Juniors'
9. Misses'
10. Women's
11. Half sizes and stouts'
12. Men's
 - a. Short
 - b. Regular
 - c. Long
 - d. Stout
 - e. Shirts — collar size and arm length
 - f. Slacks — waist and leg length

C. How Fabrics Influence Design

1. Shopping the market
2. Woven fabrics versus knitted fabrics
3. Texture and the use of linings
4. Color and design
5. Performance and end use

D. How Trimmings Influence Design

1. Embroideries and stitching
2. Lace
3. Braid

E. Sketching Ideas — The Designer's Croquis

1. Front view
2. Back view

Learning Experiences

1. Students make 10 original designs proceeding as follows:
 - a. Trace croquis (front and back) for various size ranges
 - b. Develop and sketch 10 different designs
 - c. Specify:
 - 1) Size range
 - 2) Division of the industry
 - 3) Suggested fabric and trimming (swatch if possible)
2. Arrange a field trip to a manufacturing plant where designing is done on the premises in order to observe design procedures.

III. PATTERNMAKING

Teaching Content

A. Draping

1. Principles and reasons for draping
2. The model form
3. Muslin
4. Procedures in draping
 - a. Tools for draping
 - b. Front waist — waistline dart only
 - c. Back waist
 - d. Flared skirt

B. Pattern Drafting

1. Principles and reasons for pattern drafting
2. The foundation pattern
3. Procedures of pattern drafting
 - a. Drafting a sleeve from measurements
 - b. Creating various fashion sleeves by using the slash and spread method
 - c. Dart manipulation of the basic waist

C. Grading

1. Principles of grading: maintenance of original proportions
2. Computerized grading

Learning Experiences

1. Demonstrate draping and pattern drafting.
2. Have students drape one dart waist, front only, and drape a flared skirt.
3. Have students trace a sleeve sloper and develop a new pattern by using the slash and spread method.
4. Have students manipulate dart on basic waist to develop a new pattern.

IV. BASIC TERMINOLOGY

Teaching Content

- A. Silhouettes
- B. Necklines and waists
- C. Collars
- D. Sleeves
- E. Skirts
- F. Pleats

Learning Experiences

Continuing assignment: Have students

1. Find examples of the various style details in newspapers or magazines.
2. Mount in notebook and identify.

V. CUTTING

Teaching Content

A. The Marker

1. The concept of yield (pattern placement)
2. Types of markers

B. Hand Cutting

1. Shears
2. Short knife

C. Cutting for Volume Production

1. Hand powered machines
2. Die cutting
3. Band knife
4. Numeric control (automated)

Learning Experiences

Using a pattern, developed in module III, have students cut in fabric with hand scissors as an exploratory cutting experience.

VI. SEWING

Teaching Content

A. Seams and Seam Finishes

1. Hand sewing
 - a. Basting
 - b. Thread tracing
2. Single needle lockstitch
 - a. Butterfly seam
 - b. French seam
3. Blind stitch
 - a. Hem
 - b. Tailoring
4. Double needle — flat felled
5. Overedge
6. Safety stitch overedge

B. Special Machines

1. Buttonhole
2. Button sew
3. Bar tack

C. Systems of Fabrication

1. Whole garment
2. Section
3. Semi-section

Learning Experiences

As an experience in handling fabrics, have students thread trace the sewing lines of the cut out garment piece developed in module V.

VII. FINISHING AND DISTRIBUTION

Teaching Content

A. Molding

1. Pressing
2. Heat setting

B. Packaging

1. Labeling and identification
 2. Market presentation
- C. Shipping
1. Order allocation
 2. Shipping preparation
 3. Traffic management

Learning Experiences

As an experience in pressing, have students pleat a piece of fabric with the hand iron.

VIII. COSTING

Teaching Content

- A. Materials
 1. Fabric
 2. Trimmings
 3. Findings
- B. Labor
 1. Direct
 2. Indirect
 3. Systems of payment
- C. Overhead
 1. Building and maintenance
 2. Administrative
 3. Profit
 4. Promotion

Learning Experiences

As an introductory experience in costing, have students work with the sketches developed in module II and determine price based on cost of materials, trimmings, etc. Teacher must provide labor and overhead approximation.

IX. CONTROL FUNCTIONS

Teaching Content

- A. Quality
 1. Raw material
 - a. Fabric specifications
 - b. Physical condition
 2. Operational
 - a. Seam specifications
 - b. Trim and findings
 3. Post operational
 - a. Garment specifications
 - b. Visual characteristics

Learning Experiences

Using one of their sketched designs developed in the learning experiences of module II, have students enumerate the fabric, seam and garment specifications, and visual characteristics for that garment.

Suggested Evaluation

Evaluation may be based on evidence which demonstrates the students' understanding of:

1. The structure of an apparel firm
2. The functional areas of responsibility within an apparel firm
3. The different types of garments produced in the apparel industry
4. The various steps and job functions in the apparel manufacturing process
5. Apparel terminology
6. Quality factors of a garment

Teaching Resources

TEXTS AND REFERENCES

- Fried, E. *Is the Fashion Business Your Business*
 Kolodney, R. *Fashion Design for Moderns*
 McDermott, I. *Opportunities in Clothing*

TRADE PERIODICALS

- Clothes Magazine*
Daily News Record
Women's Wear Daily

AUDIOVISUAL AIDS

- Clothing: A Pair of Blue Jeans*. 13 min., 16 mm color film, sound.
 Learning Corporation of America, Preview Library,
 50-30 Northern Boulevard, Long Island City, N.Y.
 11101
Fashion in the Making, 25 color slides with printed commentary.
 Fairchild Visuals, 7 East 12 Street, New York, New York 10003

INSTRUCTIONAL SUPPLIES

- Fabric samples
- Photographs or sketches of style details
- Chart of size ranges which shows differences
- Draped muslin patterns
- Finished oak tag patterns
- Examples of different seam finishes
- Labels from clothing
- *Basic Terminology* available from Fashion Institute of Technology, College Shop, 227 West 27 Street, New York, New York 10001

FASHION MARKETING

Prerequisites: *None*

Suggested Hours: 45

Behavioral Objectives

This area of instruction should enable students to:

1. Understand the nature and function of marketing.
2. Identify the economic and population factors which influence consumer fashion demand.
3. Recognize the implications for apparel producers of the different types of retailers and retailing activities.
4. Be familiar with marketing methods, policies and procedures employed by manufacturers of apparel fashion goods.
5. Recognize auxiliary fashion industry enterprises and the role they play in the marketing of fashion goods.

Instructional Guidelines

This area of instruction is designed to give apparel design and production students an overview and insight into the marketing process for apparel products. Inasmuch as what is designed and produced must be sold, the marketing concept begins with the ultimate consumer and works back through the retailer to the manufacturer or producer. An understanding of the nature, activities and different types of enterprises involved in the distribution of fashion goods should help students to relate their specialized field of interest and educational preparation to the workings of the fashion industry as a whole.

Although the objectives of this area of instruction are on the development of knowledge and understanding rather than on the development of specific marketing skills, it is recommended that class lectures be kept to a minimum. Community resources and activities should be utilized to the fullest extent possible for on-site visitations and student observations of actual

marketing processes. It is always wise to obtain permission from the community enterprise for any student activity taking place in their firm.

Teaching Modules

Suggested Hours

I. The Marketing Concept	3
II. Analysis of Consumer Market for Fashion Merchandise	10
III. Analysis of Retail Markets for Fashion Merchandise	15
IV. Analysis of Primary and Secondary Fashion Markets	11
V. Analysis of Auxiliary Fashion Enterprises	6
Total Hours — — —	45

I. THE MARKETING CONCEPT

Teaching Content

- A. Nature of Marketing
 1. Bridge between production and consumption
 2. Functions of marketing
 3. Types of goods marketed
- B. The Marketers of Fashion Merchandise
 1. Producers' sales departments
 2. Wholesale merchants and agents
 3. Retailers
 4. Supporting agencies and services
 5. Flow of goods in the fashion industry
- C. The Marketing Concept
 1. Historical perspective
 - a. Production oriented
 - b. "Caveat Emptor" approach
 2. Current perspective
 - a. Consumer oriented
 - b. "Consumer is King" approach
 3. Overview of marketing approach
 - a. Defining customer targets
 - b. Interpreting wants into product specifications

- c. Estimating probable sales
- d. Planning inventory needs
- e. Implementing inventory requirements
- f. Selling and promotion
- g. Pricing

Learning Experiences

1. Engage students in a class discussion of the activities involved in marketing fashion merchandise. Conclude by classifying activities as they relate to buying, selling, transporting, financing, storing, grading, risk bearing, market research. Assign students to observe, report and classify these marketing activities in community enterprises (other than production activities) related to apparel and accessory products.
2. In group discussions, have students develop a flow chart beginning with themselves as the ultimate consumers of the clothes they are wearing and working backwards through the retailers to the producers of their garments, the producers of textiles and the suppliers of natural or man-made fibers.
3. Lead a class discussion which comes to conclusions on the functional importance of marketing in the fashion industry and the different marketing levels.
4. Explore students' opinions about their freedom of choice to buy or not, their many alternative choices of products, the excess of supply as compared to demand. Come to conclusions as to where the marketing process begins currently, in contrast to historical situations in which demand exceeded supply. Emphasize the dominant role of consumers in the marketing process.

II. ANALYSIS OF CONSUMER MARKETS FOR FASHION GOODS

Teaching Content

- A. Dominant Role of Consumers
 1. Supply and demand factors
 2. Fashion determined by consumers
 - a. Industry proposes styles
 - b. Consumer acceptance determines fashions
 - c. Different fashions for different groups
- B. Population Trends and Implications
 1. Size of population
 2. Size of families
 3. Age distribution
 4. Geographic distribution
 5. Population mobility
 6. Educational attainments
 7. Occupational changes
 8. Working women

C. Income Trends and Implications

1. Average family income
2. Mass-class market

D. Buying Motivation and Behavior

1. Why customers buy what they do
2. Why customers buy where they do

Learning Experiences

1. In small group discussions, have students analyze why they have bought (or have made) what they are wearing. Classify their reasons as rational or emotional buying motives and ask students for suggestions on their implications for retailers or producers.
2. Assign each student to interview 5 personal acquaintances of different ages in order to ascertain their reasons for buying food and clothing where they do. Ask students to come to conclusions about *patronage* motives of fashion products as compared to food products.
3. Have students collect advertisements and identify the buying motives to which they appeal.
4. Lead a discussion on current fashions and how they reflect, relate and are influenced by life-styles and population trends such as suburban living, working women, white collar workers, influence of young people, etc.
5. Assign students, working in groups or individually, to research different population and income characteristics and trends, and prepare visual presentations of their findings for class presentation and display. Students may be given choices of demographic studies of their community, State or country.
6. Have students suggest or illustrate possible effects on future fashions or fashion marketing activities of these population and income trends, either in class discussions or as an outside assignment for class presentation.
7. Have students collect and bring into class examples of advertisements which seem to be directed to different groups of consumers in terms of age, occupations, education, income, etc. Lead a class discussion in which students discuss customer groups and come to conclusions on their implications for fashion retailers and producers.

III. ANALYSIS OF RETAIL MARKET FOR FASHION GOODS

Teaching Content

- A. Definition of Retailing
- B. Evolution of Retailing
- C. Types of Retailing and Distinguishing Characteristics

1. Types
 2. Distinguishing characteristics
 3. Fashion position of each type
- D. Retail Pricing Policies and Procedures
1. Variations in policies
 - a. Price ranges
 - b. Markup policies
 2. Procedures
 - a. Figuring retail markup
 - b. Underselling techniques
- E. Retail Buying Policies and Procedures
1. Variations in buying policies
 - a. Brands
 - b. Fashion leadership
 - c. Breadth and depth of assortments
 - d. Imports
 - e. Quality and grades of merchandise
 - f. Exclusives
 2. Procedures
 - a. Seasonal dollar planning
 - b. Unit planning and control
 - c. Selecting resources
 - d. Placing initial orders and reorders
 - e. Specification buying
 - f. Centralized buying
- F. Sales Promotion Policies and Procedures
1. Types of selling and promotion
 2. Variations in sales promotion policies
 3. Procedures
- G. Resident Buying Office Affiliations
1. Function of buying offices
 2. Types of buying offices
 3. Services of buying offices

Learning Experiences

1. Have student do a coordinated survey of the different types of apparel and accessory retailers in a major shopping area of the community to result in a visual presentation on an enlarged map of the area which will identify the name, location, and type of every apparel retailer within the surveyed area. The different types of retailers will be differentiated by small colored flags on the map, each color representing a particular type and bearing the name and address of the identified retailer. The illustrated map can then be used as a basis for additional learning experiences pertaining to different types of apparel and accessory retailers — e.g. the different customer groups that are their target, and their share of the fashion dollars of the community.
2. Plan one or more field trips to retail stores and make arrangements for a behind-the-scenes tour of

the store to be preceded or followed by a talk by a merchandising executive to the students (merchandise manager or buyer). Request that the talk be focused on the buying and selling policies of the store with an explanation of the reasons for these policies and the methods employed in implementing these policies. Ask that time be allowed for a question and answer period.

3. Arrange for a guest speaker panel in class. Guests should be invited from different types of retail stores (e.g. chain store, departmentalized store, discount store) to discuss with the class the merchandise policies and procedures followed in their particular store. Prepare students in advance for this guest panel and assign each student to submit to you in writing a question for the panel. After screening questions for possible irrelevancy, duplications, appropriateness, etc., return to students for use during the question and answer period of the panel discussion.
 4. Plan a class activity that will enable students to actively participate in policy making decisions and in their implementation. For example, the class might organize and operate a retail store within the classroom and within class time, such as a flea market, a handicraft store, a rummage sale, or a resale store in which school personnel might bring goods to sell. Involve all students in policy making decisions as to the nature of the "store," pricing, extent and type of merchandise to be offered for sale, selling, and services. After policies have been decided, have students work as committees to implement these policies. Each committee should be given responsibility for a specific activity such as procuring the merchandise, publicizing the store opening and hours, improvising display fixtures, stock counters and tables, setting up bookkeeping and financial records, ticketing and inventorying merchandise, etc. If the store is to be more than a one day event, some responsibilities can be assigned on a rotating basis.
- This type of a comprehensive learning experience in retail operations can serve as a springboard and motivation for further discussion of retail policies and procedures as time allows.
5. For a particular recognizable store selected by the students, have students create two advertisements — one should be an institutional ad and one should be an apparel product ad. For the product ad, students should give a brief rationale for the selection of their product and the customer group to whom their ad is directed.
 6. Using their own apparel and improvising display props, have student teams create retail selling dis-

plays. This activity should be preceded by assigned observations of retail displays in order that students familiarize themselves with such different types of display as windows, interiors, ledge displays, counter displays, etc. Student displays may be evaluated by the class as a whole for their effectiveness as a sales promotion tool.

7. Lead a class discussion on the importance of brand names in the selling of apparel. Compare the relative importance of brand names for men's and women's apparel and have students come to conclusions.
8. Assign students to shop an accessory or an apparel department in a large retail store in which imported merchandise is carried. Ask students to compare the foreign-made merchandise with the domestic merchandise in the same department for value, style, fabric, workmanship and prepare a report on their findings for class presentation. After students present their findings and comparisons, have class summarize the reasons why retailers may buy foreign-made clothing and accessories.

IV. ANALYSIS OF PRIMARY AND SECONDARY FASHION MARKETS

Teaching Content

A. Primary Markets: Textiles and Non-Textiles

1. History and development
2. Scope and economic importance
3. Nature of primary markets

B. Secondary Markets: Apparel Producers

1. History and development
2. Scope and economic importance
3. Nature of secondary markets

C. Marketing Policies, Considerations, and Procedures

1. Product policies and considerations
 - a. Extent of line
 - b. Quality
 - c. Pricing
 - d. Timing
2. Branding policies and considerations
 - a. Branded goods
 - b. Unbranded goods
3. Distribution channel policies and considerations
 - a. Types of outlets
 - b. Number of outlets
4. Selling policies, considerations, and procedures
 - a. Personal selling
 - b. Advertising
 - c. Publicity
 - d. Trade shows
 - e. Fashion shows

f. Trunk shows

5. Market research policies and procedures
 - a. Collecting information
 - b. Sources of information

Learning Experiences

1. Following the procedures outlined for the class survey of apparel retailers, have students do a survey of apparel and/or textile producers located in the community using additional color flags to identify the name, location and type of apparel or textile producer in terms of their production specialization.
2. Plan one or more behind-the-scenes field trips to apparel and/or textile producers in the community. Arrange for a talk by a marketing or selling executive in the company to explain to whom they sell and their marketing procedures, policies, and techniques.
3. Assign different students, either working in groups or individually, to research the history and growth of the textile industry and the apparel industry in the U.S. for class presentation. This assignment can be expanded to include the scope and economic importance of textile and apparel production. Discuss with students the possibility of making oral or visual class presentations of their findings.
4. Assign students to do a comparison report on different apparel manufacturers' merchandise within any one department of a store in terms of retail prices, quality and workmanship, and distinctive style features. This experience will familiarize students with similarities and differences in manufacturer's product policies.
5. As a learning experience in branding policies of manufacturers, have students name as many apparel brands as they can, including the brand names, if any, of the clothes they are wearing. Lead a class discussion on the pros and cons of national brands for apparel manufacturers. Assign students to bring in two advertisements of branded products by producers. These can be found in magazines or trade periodicals rather than in newspapers.
6. Select the names of approximately 6 well-known manufacturers' names (e.g. Wranglers, Levis) and assign students to shop different stores in the community for their products. Student findings can serve as a springboard for a discussion on selective, exclusive or mass distribution and the considerations governing these policy decisions.
7. Have students role-play selling situations with one student role-playing a buyer and the other playing the part of a manufacturer's salesman. The merch-

andise that is being "bought and/or sold" can be supplied from the students' personal wardrobes.

8. Have students create trade advertisements by manufacturers which can be either institutional or product ads. This activity should be preceded by an examination of producers' ads appearing in trade periodicals. Lead a class discussion on the difference in the advertising appeals directed toward professional buyers and the appeals in retail advertising directed to ultimate consumers.
9. Organize the class into groups and have each group plan a new simulated apparel firm. Each group will come to a conclusion on their product offerings, branded or unbranded policies, their ultimate consumers, the types of retailers they would prefer for the distribution of their products, their sales promotion activities, and the sources of information they would use in deciding what to produce. Each group will present their conclusions to the class at large. After a question and answer exchange between each group and the class at large, the class may vote on which simulated firm is most likely to succeed and why.

V. ANALYSIS OF AUXILIARY FASHION ENTERPRISES

Teaching Content

- A. Publications and Their Function
 1. Trade publications
 2. Consumer fashion magazines
- B. Promotional Agencies and Their Functions
 1. Advertising agencies
 2. Publicity agencies
 3. Display agencies
- C. Trade Associations and Their Function
 1. Manufacturer associations
 2. Designer associations
 3. Textile and non-textile associations
- D. Labor Unions and Their Function
 1. International Ladies Garment Workers Union
 2. Amalgamated Clothing Workers Association
- E. Fashion Consulting Agencies and Their Function

Learning Experiences

1. Have students research one trade periodical of the fashion industry and report on the type of information it contains and to whom this information would be of interest — e.g. retailers, producers, etc. Draw conclusions on the function of trade periodicals in the fashion industry.
2. Demonstrate advertisements by apparel manufacturers appearing in fashion magazines in order

to initiate a discussion on advertising agencies in terms of what they are, the services they perform for producers and their role in fashion marketing.

3. Write to the International Ladies Garment Workers Union (1710 Broadway, N.Y., N.Y.) for posters illustrating early sweatshop working conditions. Show these posters to the class and lead a discussion on labor unions in the apparel industry and their function and contribution. Assign students to examine their apparel purchases for union labels on the inside of garments.
4. Lead a discussion on independent fashion consultants and fashion advisory services utilized by retailers and producers. Have students suggest what they would contribute to retailers and manufacturers if they were independent fashion consultants.

Suggested Evaluation

Evaluation should be based on the student's ability to:

1. Define, explain or identify the marketing terminology discussed in this area of instruction.
2. Identify the economic and population factors which influence consumer fashion demand.
3. Match a list of distinguishing characteristics to the different types of retailers.
4. Distinguish between production activities and marketing activities of apparel manufacturers.
5. Explain the role and importance of the marketing process in the fashion industry.

Teaching Resources

TEXTS AND REFERENCES

- Anspach, K. *The Why of Fashion*
Corinth, K. *Fashion Showmanship*
Graphic Guide to Consumer Markets
Jarnow, J. and B. Judelle. *Inside the Fashion Business*
Phillips, C. and D. Duncan. *Marketing Principles and Methods*
Troxell, M. and B. Judelle. *Fashion Merchandising*
U.S. Department of Commerce. *U.S. Industrial Outlook*

TRADE PERIODICALS

- Clothes Magazine*
Daily News Record
Women's Wear Daily

INSTRUCTIONAL SUPPLIES

- Current advertisements of textile and apparel producers and of retailers
- Mimeographed articles from trade publications
- Graphic presentations of population and income trends — demographics
- Community map

Basic Skill Development Instruction

INTRODUCTION TO THE CUTTING FUNCTION

Prerequisites: *Basic Textiles*

Suggested Hours: 15

Behavioral Objectives

This instructional area should enable the student to:

1. Know what a marker is and how to properly place patterns into a marker.
2. Hand spread fabrics using different methods in which fabrics are spread.
3. Cut with a hand shears.

Instructional Guidelines

The purpose of this area of instruction is to introduce the student to the marker making, spreading and cutting functions. The level of quality attained in the finished product relates to the proper execution of these functions. This execution is directed by an understanding of marker making, spreading and cutting principles. The content includes principles and procedures for these functions. The emphasis should be on an understanding of these fundamental principles and how to implement them. The student therefore should be instructed in the procedure to follow in placing patterns in a marker, laying up of fabric and cutting that fabric so as to attain a high degree of quality in these functions.

It is suggested that the teacher develop miniature patterns (possibly quarter scale) to use in this instructional area. A symmetric set of patterns should be developed for all parts for two sizes of a simple garment, and both sets of these patterns should be given to each student. Pattern grain lines, notches, etc. must be identified. Enough fabric for eight thicknesses of fabric by the length and width of the marker (that is made using the two quarter scale sets of patterns) is also required.

In the laboratory sessions the students will make a

marker, lay fabric up, and cut that marker. The teacher will use these experiences to show relationships to product quality and the cost of attaining that level of quality.

Teaching Modules

	Suggested Hours	
	Class	Laboratory
I. Marker Making	3	3
II. Spreading	2	2
III. Cutting	3	2
Total Hours — — — —	8	7

I. MARKER MAKING

Teaching Content

- A. Chalk Marking Patterns
 1. Directly on top of lay
 2. Crayon (marking chalk)
 3. Spray (paint)
- B. Marking Patterns on Marking Cloth
- C. Marking Patterns on Paper
 1. Single marker
 2. Use of carbon to make multiple markers
- D. The Perforated Marker
- E. Marker Making Principles — Quality Specifications
 1. Line clarity
 2. Cutting clearance freedom
 3. Appropriate pattern identification
 4. Pattern conformity to grain lines
 - a. Affect drape
 - b. Affect fit
 5. The correct number of patterns in the marker
 6. Completeness of patterns, e.g. notches, punch holes
 7. Fabric utilization in pattern placement
 - a. Largest parts by area (if not size) first
 - b. Blocking of patterns
 8. Correctness of marker width

Learning Experiences

Using the miniature patterns described in the instructional guidelines, have students make a marker on dotted (or numbered or lettered) marking paper that is 18 inches wide. Have them draw lines to represent the edges of the fabric 15 inches apart. At the right side of the paper a line is drawn at right angles to both lines connecting them. The largest patterns are first placed on the marker; then the intermediate size patterns followed by the smallest patterns. An attempt should be made to fit the smaller patterns into open areas between patterns in the marker. A line is drawn at the left end of the marker connecting both lines (at right angles to both lines). An attempt should be made to have patterns fully fill area before left end line is drawn.

The miniature patterns should have grain lines identified on them and the student should place the patterns in the marker so that they conform to the grain lines.

II. SPREADING

Teaching Content

A. Spreading Procedures

1. Identification of the face to a fabric
2. Laying fabric face to face — pairing patterns
3. Laying fabric face (up) one way
 - a. Sewing manipulation to pick up patterns (for stitching)
 - b. Pattern parts to be sewn in pairs

B. Spreading Principles

1. Fabric warp and filling alignment — fabric distortion
2. Major selvage edge alignment
3. Fabric tension
 - a. Fabric spread flat
 - b. Not bubbled or stretched taut

Learning Experiences

Using fabric that is 16 inches wide, have students spread it face to face the length of the marker (prepared in the preceding laboratory project). Fabric should be spread without tension or excessive loose-

ness (bubbling). Spread eight (8) ply (thickness) of fabric.

III. CUTTING

Teaching Content

A. Fabric Cutting Systems

1. Hand power
 - a. Short knife
 - b. Hand shears (scissors)
2. Motor power
3. Die cutting (cookie cutter)
4. Automated (use of numeric controlled machinery)

B. Cutting Principles

1. Identifying pattern precision when cutting
 - a. Split marked line (both sides of line are visible on each side of cut line)
 - b. Conformity of stock parts to pattern
2. Precision of identification markings
 - a. Minimal notch depth
 - b. Drill holes run true (no deviation) through lay

Learning Experiences

Have students place marker (previously made) over fabric (previously spread) and, using a hand shears, cut out the parts.

Suggested Evaluation

Evidence of student proficiency in cutting parts in which:

1. Perimeters of cut parts in stacks conform to patterns.
2. Direction of fabric grain is correct.

Teaching Resources

TEXTS AND REFERENCES

Apparel Engineering and Needle Trades Handbook
Solinger, J. *Apparel Manufacturing Analysis*

INSTRUCTIONAL SUPPLIES

- Miniature patterns (as described in introductory Instructional Guidelines)

INDUSTRIAL SEWING

Prerequisites: *None*

Suggested Hours: 80

Behavioral Objectives

This area of instruction should enable students to:

1. Identify major stitch/seam types and their applications.
2. Understand the working mechanisms and mechanical adjustments of industrial sewing machines.
3. Operate industrial sewing machines.
4. Identify and use appropriate attachments.
5. Develop hand-sewing skills.

Instructional Guidelines

This area of instruction is designed to instruct students in the operation of industrial sewing machines and in the principles of sewing machine mechanics as they relate to industrial sewing equipment. The utilization of sewing machine attachments should be discussed and their application to particular sewing problems should be demonstrated by the teacher. The Federal Stitch Seam Standards (F-751-A) should be taught in order to acquaint students with the many different stitch/seam types available and the particular advantages, disadvantages and utilization of each.

During laboratory sessions, students will thread and operate all industrial sewing machines under study and also adjust and operate appropriate attachments. Each one of the laboratory learning experiences should be preceded by a demonstration by the instructor. The laboratory sessions will allow the students to develop their manipulative skills and abilities in operating industrial sewing machines. Time should be utilized for students to gain and sustain speed in sewing various sample configurations and in various basic handling maneuvers.

Teaching Modules

	Suggested Hours	
	Class	Laboratory
I. Industrial Seam/Stitch Types	6	2
II. Machine Operating Mechanics and Adjustments	8	8
III. Manipulative Skills: Machine Sewing	6	30
IV. Machine Attachments: Operation and Adjustments	4	8
V. Manipulative Skills: Hand Sewing	3	5
Total Hours — — —	27	53

I. INDUSTRIAL STITCH/SEAM TYPES

Teaching Content

A. Federal Stitch Types and Their Applications

1. 100 series
2. 200 series
3. 300 series
4. 400 series
5. 500 series
6. 600 series

B. Federal Seam Types and Their Application

Learning Experiences

1. Demonstrate Federal stitch types and seam types.
2. Have students analyze their own wearing apparel and list all possible seam and stitch types, by location on their garments and using the Federal 751-A.

II. MACHINE OPERATING MECHANICS AND ADJUSTMENTS

Teaching Content

A. Types of Machines

1. Lockstitch
 - a. Single needle
 - b. Double needle
2. Chainstitch

- a. Single needle
- b. Double needle
- 3. Overlock safety stitch
- 4. Special purpose machines
 - a. Button hole
 - b. Button sew
 - c. Bar tack

B. Parts of the Sewing Machine and Their Functions

- 1. Tensions
- 2. Take-ups
- 3. Presser feet
- 4. Feed dogs
- 5. Throat plate
- 6. Needler
- 7. Loopers
- 8. Hooks
- 9. Stitch size regulators
- 10. Lubrications

Learning Experiences

- 1. Demonstrate different types of sewing machines, including machine parts and function.
- 2. Have students thread machines and form stitches without using power.

III. MANIPULATIVE SKILLS: MACHINE SEWING

Teaching Content

A. Basic Sewing Manipulations

- 1. Straight sewing
- 2. Angular sewing
- 3. Curved sewing

B. Advanced Sewing Manipulations

- 1. Sewing squares
- 2. Sewing circles
- 3. Edge or top stitching
- 4. Back tacking
- 5. Joining straight seams
- 6. Joining curved seams
- 7. Joining curved to straight seams
- 8. Joining two appropriate curves

C. Material Handling

- 1. Parts from same stack
- 2. Parts from separate stacks
 - a. Mid-air alignment
 - b. Consecutive table alignment

Learning Experiences

- 1. Demonstrate basic sewing manipulations by sewing without thread on paper. Students then perform the same manipulation.
- 2. Demonstrate advanced sewing manipulations with thread on paper. Students then perform the same manipulation.

- 3. In order to develop basic coordination, speed and dexterity as required in the industrial situation, have students perform and repeat the 8 advanced sewing manipulations and:

- a. Pick up parts from the same stack of cut parts (face to face in pairs) and align to each other, align to needle and sew.
- b. Pick up parts from separate stacks of cut parts, align to each other in mid-air, align to needle and sew.
- c. Pick up part from first stack and place it under presser foot; pick up part from second stack, align to part under presser foot, align to needle and sew.
- 4. If possible, students should experience an actual mass-production situation. Class can mass produce an item or product which has been pre-cut either by the instructor, a member of the program's advisory committee or by the students themselves.

IV. MACHINE ATTACHMENTS OPERATION AND ADJUSTMENTS

Teaching Content

A. Types of Attachments

- 1. Gauges
- 2. Feet
- 3. Hemmers
- 4. Binders
- 5. Folders
- 6. Cutters

B. Uses of Each Type of Attachment

- 1. Where utilized
- 2. When utilized
- 3. How utilized
- 4. Reason for utilization

C. Installation and Adjustments of Attachments

- 1. Fitting to the machine
- 2. Recognizing performance
- 3. Making adjustments

D. Maintenance of Attachments

- 1. Sharpening
- 2. Polishing
- 3. De-burring
- 4. Re-forming

Learning Experiences

- 1. Demonstrate uses, adjustments, and maintenance of attachments.
- 2. Have students use sewing machines and attachments to gain practice in use of these devices.

V. MANIPULATIVE SKILLS: HAND SEWING

Teaching Content

- A. Quality of Hand Sewing
- B. Applications of Hand Sewing
 - 1. Buttons
 - 2. Buttonholes
 - 3. Basting
 - 4. Hemming
 - 5. Decorative stitching

Learning Experiences

Have students sew buttons and buttonholes, baste lining and hem bottoms.

Suggested Evaluation

1. Have students analyze two sewing machines and complete a laboratory sewing machine analysis guide to identify enumerated items. (See following sample of analysis guide.) Evaluation is based on the students' knowledge of the parts, operating mechanisms and operation of these sewing machines. It is recommended that two differing machine stitch types be used.
2. Students are given 50 rectangular pieces of fabric, 4" x 8", that have been cut face to face. Students are instructed to sew the four inch size, the eight inch size and then the other four inch size, maintaining a foot spaced seam and having a square corner. The students are to sew twenty consecutive rectangles in aforementioned manner in five minutes or less, and be evaluated accordingly. The objective of this suggested approach is to evaluate students' proficiency in the sewing operations required in a sewing factory.

Teaching Resources

TEXTS AND REFERENCES

Federal Stitch Standards, 751 A (Available from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402)

Hannan, W. *Mechanics of Sewing*

Solinger, J. *Apparel Manufacturing Analysis*

INSTRUCTIONAL SUPPLIES

- Woven fabric cut into the following configurations:
 - 9" x 3"
 - 5" squares
 - 8" diameter circles
 - 9" equilateral triangles
 - 4" x 8" rectangles
- Operational manuals from machine manufacturers

Sample of Sewing Machine Analysis Guide

I. MACHINE

- A. Manufacturer
- B. Model No.
- C. Serial No.

II. MACHINE BED

- A. Type
- B. Dimensions
 - 1. Needle to upright
 - 2. Needle to edge opposite upright
 - 3. Needle to front edge
 - 4. Needle to back edge
 - 5. Height under arm
 - 6. Cylinder diameter (if applicable)

III. HEAD PULLEY

- A. Diameter
- B. Direction of Rotation
- C. Location
- D. Safety Features

IV. THROAT PLATE

- A. Description
- B. Mounting Mechanism
- C. Chaining Plate
- D. Chaining Tongue

V. STITCHING MECHANISMS

- A. Needle or Needles
 - 1. Description
 - 2. Mounting mechanism
 - 3. Scarf position
 - 4. Gauge
- B. Hook(s)
 - 1. Type
 - 2. Location
 - 3. Action cycle
 - 4. Bobbin case
 - a. Description
 - b. Threading sequence
- C. Looper
 - 1. Type
 - 2. Description
 - 3. Mounting mechanism
 - 4. Action cycle
- D. Loop Spreader
 - 1. Location
 - 2. Action cycle

E. Cover Thread Finger or Hook

1. Location
2. Action cycle

F. Tensor(s)

1. Location
2. Type
3. Description

G. Take-up(s)

1. Location
2. Type
3. Description
4. Action cycle

VI. STITCH TYPE

VII. FEED MECHANISM

A. Type

B. Presser Foot

1. Description
2. Mounting mechanism

C. Presser Foot Lift

1. Type
2. Location
3. Linkage
4. Operational clearance
5. Maximum clearance

D. Feed Dog

1. Description
2. Mounting mechanism
3. Adjustment

E. Stitch Size Regulator

1. Type
2. Location
3. Operation
4. Controls

VIII. LUBRICATION SYSTEM

A. Type

B. Operational maintenance

IX. THREADING SEQUENCES

X. STITCHING SEQUENCES

XI. STITCH SAMPLE

On cloth provided by the instructor make 3 stitch samples as follows:

1st line — a balanced stitch

2nd line — an unbalanced stitch of the same size

3rd line — a balanced stitch of another size

Mark each one, and mount in report.

INTRODUCTION TO THE PRESSING FUNCTION

Prerequisites: *Basic Textiles*

Suggested Hours: 17

Behavioral Objectives

This area of instruction should enable students to:

1. Know the variable elements of pressing fabrics and know how to measure them.
2. Understand how pressing variables affect the quality of different fabrics.
3. Be proficient in the use of different types of hand irons for pressing.

Instructional Guidelines

The purpose of this area of instruction is to introduce the pressing function. The student will learn how heat, moisture, pressure and time affect different fabrics. When students understand how these variables affect a fabric, they can then apply these variables to attain a desired level of quality in the finished product.

Instruction will show how various combinations of heat, moisture, pressure and time affect the shape, form, surface structure and density of different fabrics. The major emphasis, therefore, relates to the effect the elements of pressing have on the quality of the finished product.

Teaching Modules

	<i>Suggested Hours</i>	
	<i>Class</i>	<i>Laboratory</i>
I. Elements of Pressing	2	2
II. Quality Characteristics	3	5
III. Hand Irons	2	3
Total Hours — — —	7	10

I. ELEMENTS OF PRESSING

Teaching Content

- A. The Variables Defined
1. Heat

2. Moisture
3. Pressure
4. Time

B. Techniques for Measuring the Variables

1. Thermometer for heat
2. Potentiometer for heat
3. Correlation chart for moisture
4. Weight and force for pressure
5. Stopwatch for times

Learning Experiences

1. Have students set the iron control to a low (temperature and steam) setting and then weigh a fabric swatch *after* subjecting it to steam for one half a minute. The weight is recorded.
2. Have students repeat the procedure for six (6) different temperature and steam settings. Have students prepare a comparison report of characteristics and of fabric weights subjected to different temperatures. (Fabric should weigh less at high temperature and pressure and more at low temperature and pressure.)

II. QUALITY CHARACTERISTICS

Teaching Content

A. The Characteristics Defined

1. Shape
2. Form
3. Surface
4. Density

B. Procedures for Evaluating the Characteristics

1. Dimensional stability
2. Weight
3. Visual
 - a. Color
 - b. Surface
4. Time correlation

Learning Experiences

1. Demonstrate
 - a. Shape: Using loose knit fabric
 - 1) Measure dimensions
 - 2) Apply steam

- 3) Measure dimensions
 - b. Form: Iron a crease into the swatch of 100% cotton fabric
 - c. Surface Structure: Using the swatch of a 100% synthetic fabric, define the color and surface structure before and after high steam application.
 - d. Density: Weigh a 100% woolen fabric swatch before and after high steam application.
2. Have students conduct the following experiment:
 - a. Using six swatches of synthetic fabric, the student will press a crease into the first swatch by setting the iron at a low temperature and steam setting and applying pressure (with the iron) for 5 seconds. This process is repeated increasing the time by 5 seconds each time, until all six swatches have been pressed.
 - b. This entire process is repeated first for a medium temperature and steam setting, and then a high temperature and steam setting.
 - c. The student will then evaluate all of the swatches and form a conclusion as to fabric changes due to heat, moisture, pressure and time, and also determine the best combination of the variables to yield a quality crease to the tested fabric.

III. HAND IRONS

Teaching Content

- A. Basic Types (When and How to Use)
 1. Steam
 2. Electric
 3. Steam electric

4. Water

B. Types of Controls

1. Thermostat
2. Rheostat

Learning Experiences

Using each type of iron the student will crease press wool, acetate, and polyester fabrics. The differences in results obtained will be noted and identified by students.

Suggested Evaluation

A student report identifying the quality changes that occur in knitted and/or woven cotton, acetate, polyester and wool fabrics under different temperature steam setting. Evaluation is based on evidence of the student's ability to recognize the changes that can be effected in different fabrics through molding (pressing) and the relationship of the quality of the finished product to these changes.

Teaching Resources

TEXTS AND REFERENCES

Solinger, J. *Apparel Manufacturing Analysis*

INSTRUCTIONAL SUPPLIES

- Hand irons — steam, electric, water, steam electric
- 4" x 4" swatches of 100% wool, 100% cotton, 100% polyester or nylon and a loose knit fabric of any fiber
- Rulers
- Gram scale
- Stop watches

FABRIC LAY-UP (SPREADING)

Prerequisites: *Basic Textiles*

Suggested Hours: 27

Behavioral Objectives

This area of instruction should enable students to:

1. Know how to spread (lay-up) a fabric after identifying its characteristics.
2. Be proficient in operating different kinds of spreading equipment.
3. Be capable of properly overlaying (splice or overlap) fabric during spreading.

Instructional Guidelines

This area of instruction is concerned with the principles of spreading (lay-up) of fabrics and the appropriate spreading mechanisms. Manipulations for attaining quality in the lay should be demonstrated by the instructor and then practiced by students during the laboratory sessions.

Content of this area of instruction includes the criteria for evaluating fabric and its preparation (bolt form) that a sewn-products' manufacturer applies in deciding how to lay-up fabric. Discussions and demonstrations will also relate to spreading systems, and to definitions of quality and the means of attaining it in spreading.

Students through practice, should become familiar with the operating mechanisms and operation of fabrics (yard goods) machinery. They should be able to identify these mechanisms and know their purpose in order to use them. If spreading machines are not available, Module II can be eliminated from this area of instruction.

Teaching Modules

	<i>Suggested Hours</i>	
	<i>Class</i>	<i>Laboratory</i>
I. Fabric Criteria for Spreading	4	11

II. Identification of Spreading Mechanisms and Their Operation	4	5
III. Fabric Shade and Damage Control During Spreading	1	2
Total Hours — — — —	9	18

I. FABRIC CRITERIA FOR SPREADING

Teaching Content

A. Fabric Identification: Construction and Elasticity

1. Woven

- a. Construction
- b. Stretch (elasticity)
 - 1) Warp grain: least
 - 2) Filling grain: intermediate
 - 3) Bias grain: most

2. Knitted

- a. Construction
- b. Stretch
 - 1) Straight grain: least (more than woven)
 - 2) Cross grain: intermediate
 - 3) Bias grain: most

3. Felted or Non-Woven

- a. Construction
- b. Stretch
 - 1) Minimal
 - 2) Same in all directions

B. Visual Characteristics

1. Single face

- a. Outside of fabric clearly evident
- b. Positive identification when spreading

2. Reversible

- a. Similar appearance of both sides of fabric
- b. Necessity of control in spreading

3. Double faced

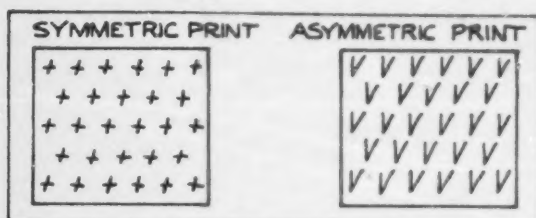
- a. Difference in both sides of fabric
- b. Usability of either side as outside of product

4. Symmetry

- a. Appearance of fabric when rotated 180 degrees against itself

b. Causes of differences in appearance

- 1) Tactile characteristics (e.g. nap, brushed pile)
- 2) Construction (e.g. knit fabric)
- 3) Printing

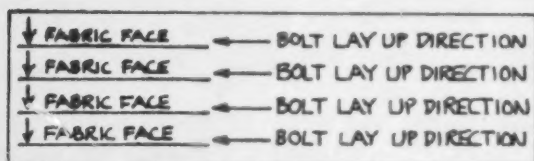


C. Fabric Bolt Preparation

1. Relationship
 - a. Handling when spreading
 - b. Equipping of spreading machine
2. Methods of putting-up fabric
 - a. Roll
 - b. Bookfold
 - c. Rack
 - d. Board
3. Selvage variations of bolt preparation
 - a. Open preparation: selvage edges from same ply on same plane
 - b. Closed preparation: selvage edges from same ply superimposed over each other
 - c. Tubular preparation (e.g. weft knit): no selvage

Learning Experiences

1. Demonstrate fabric spreading procedures related to fabric symmetry as follows:
 - a. Face up and in one (laying up) direction



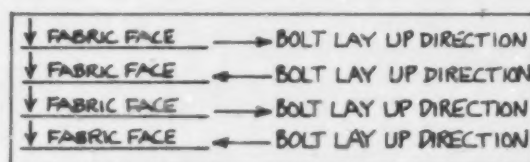
- 1) Beginning at right side of spreading table at right side mark, (after determining distance to be spread and marking the table accordingly), move to the left spreading ply on fabric. Keep one selvage approximately two inches from the table edge. This must be constant for the length spread.
- 2) Upon reaching left side mark, stop spreading and cut bolt of fabric away from ply of fabric on the table.
- 3) Move the bolt to the right without laying up fabric.

4) At right side superimpose fabric over fabric on table and align.

5) Repeat previous steps until proper number of ply have been spread.

6) Fabric tension must be constant.

b. Face up and in both (laying up) directions



1) Beginning at right side of spreading table at right side mark (after determining distance to be spread and marking the table accordingly), move to the left, spreading ply of fabric. Keep one selvage approximately two inches from the table edge. This must be constant for the length spread.

2) Upon reaching left side mark, stop spreading and cut bolt of fabric away from ply of fabric on the table.

3) Rotate bolt of fabric 180° on its own plane. Superimpose fabric over fabric on table and align (at left side of table).

4) Move to the right, spreading ply of fabric. (Superimpose and align to ply of fabric on table.)

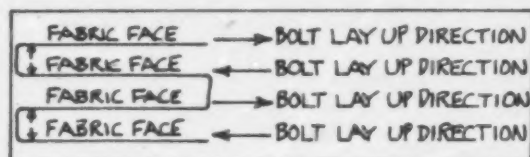
5) Mark, stop spreading, and cut bolt of fabric away from ply of fabric on the table.

6) Rotate bolt of fabric 180° on its own plane.

7) Repeat previous steps until proper number of ply have been spread.

8) Fabric tension must be constant.

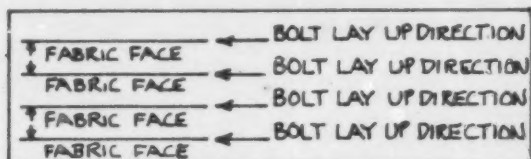
c. Face up and down and in both (laying up) directions



1) Beginning at right side of spreading table at right side mark (after determining distance to be spread and marking the table accordingly), move to left, spreading ply of fabric. Keep one selvage approximately two inches from the table edge. This must be constant for the length spread.

2) Upon reaching left side mark, stop spreading and fold fabric face down. Align fabric.

- 3) Move to the right, spreading ply of fabric (superimpose and align to ply of fabric on table).
- 4) Upon reaching right side mark, stop spreading and fold fabric face up. Align fabric.
- 5) Repeat previous steps until proper number of ply have been spread.
- 6) Fabric tension must be constant.
- d. Face up and down and in one (laying up) direction



- 1) Beginning at right side of spreading table at right side mark (after determining distance to be spread and marking the table accordingly), move to the left, spreading ply of fabric. Keep one selvage approximately two inches from the table edge. This must be constant for the length spread.
 - 2) Upon reaching left side mark, stop spreading and cut bolt of fabric away from ply of fabric on the table.
 - 3) Move the bolt to the right without laying up fabric and rotate bolt of fabric 180° on its own plane.
 - 4) At right side superimpose fabric over fabric on table and align. Fabric will be face down.
 - 5) Move to the left spreading ply of fabric (superimpose and align to ply of fabric on table).
 - 6) Upon reaching left side mark stop spreading and cut bolt of fabric away from ply of fabric on the table.
 - 7) Move the bolt to the right without laying up fabric and rotate bolt of fabric 180° on its own plane.
 - 8) At right side superimpose fabric over fabric on table and align.
 - 9) Repeat previous steps until proper number of ply have been spread.
 - 10) Fabric tension must be constant.
2. Have students identify fabric construction, visual characteristics and fabric bolt preparation, and practice hand spreading using all of the aforementioned procedures which have been demonstrated. It is recommended that six ply be spread a distance of six yards for each procedure. Care is to be exercised to apply the proper amount of tension.

II. IDENTIFICATION OF SPREADING MECHANISMS AND THEIR OPERATION

Teaching Content

A. Stationary Spreaders

1. Fixed (two uprights supporting a rod which folds bolts of fabric)
2. Portable (portable frame with two uprights supporting the rod or a portable bin spreader)

B. Traveling Spreaders

1. Common mechanisms
 - a. Frame of housing
 - b. Wheels
 - c. Fabric support rod or platform
 - d. Guide collars
2. Other mechanisms
 - a. Tension or threading bars
 - b. Turntable devices
 - c. Ply counters
 - d. End catheters
 - e. Surface leveling blade
 - f. Bolt drive
 - g. Alignment shifter
 - h. Ply cutting device
 - i. Propulsion system (with stop control)
 - j. Automated edge alignment

Learning Experiences

Have students thread machine (properly set up machines with fabric). In a notebook student should diagram the threading sequence and identify all mechanisms. If enough fabric is available students should practice the spreading methods presented in Module I.

III. FABRIC SHADE AND DAMAGE CONTROL DURING SPREADING

Teaching Content

A. Splice or Overlay Manipulation

1. Objective: minimum loss of fabric
2. Removal of non-usable area of fabric
3. Replacement with usable fabric

B. Procedures in Splicing Manipulation

1. Example of manipulation (Figure 1)
2. Spreading from 7 to 1
 - a. Damage in area D
 - b. Damage cut out by cutting fabric from selvage to selvage at the damage and at number preceding damage (# 5)
 - c. Spreading commences from number preceding # 5

SPLICING MANIPULATION

FIGURE 1.

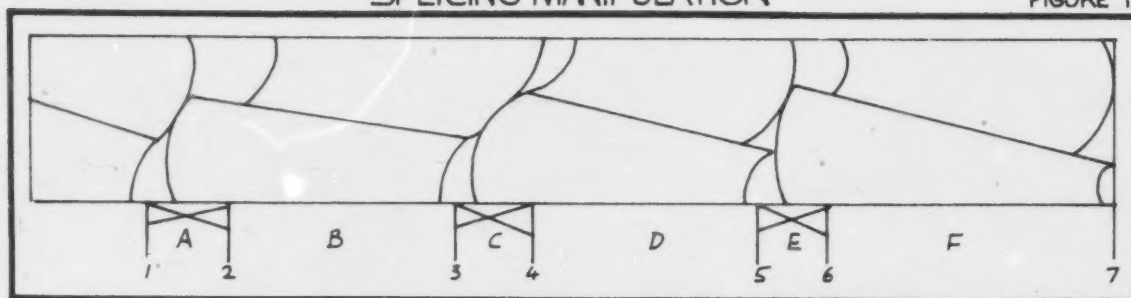
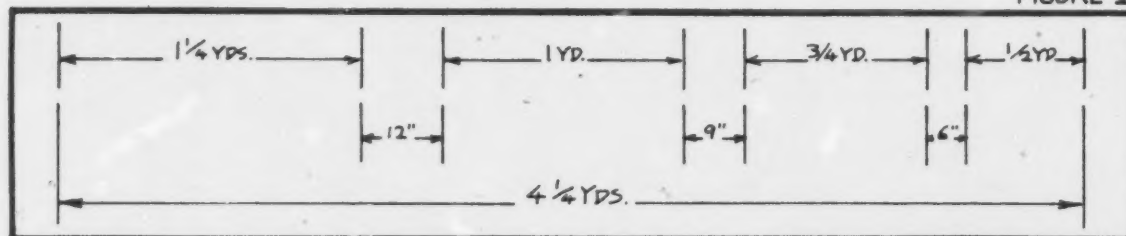


FIGURE 2.



C. Examples as in Figure 1

1. Spreading from 7 to 1 with damage in area A
 - a. Cut through at damage and at # 2
 - b. Remove fabric
 - c. Commence spreading at # 3
2. Spreading from 1 to 7 with damage in area D
 - a. Cut through at damage and at # 4
 - b. Remove fabric
 - c. Commence spreading at # 3

Learning Experiences

Have students place shade and damage control marks on the table (no numbers or letters) as in Figure 2.

Suggested Evaluation

A spreading performance test using a spreading machine, or hand spreading if machine is not available. Have students spread 16 ply of fabric six yards face up and down and in both (lay-up) directions. The

teacher is to shade and damage-control mark the table without letters or numbers, placing at least two damages in a bolt of fabric. Evaluate students' ability to lay the fabric so that one selvage edge is at a constant distance from the edge of the table and to use the proper spreading procedures for working out the damages.

Teaching Resources

TEXTS AND REFERENCES

Apparel Engineering and Needle Trades Handbook
Solinger, J. *Apparel Manufacturing Analysis*

INSTRUCTIONAL SUPPLIES

- Sample fabrics which illustrate fabric criteria described in Module I
- Fabric (yard goods) machinery
- Spreading tables
- Fabric for spreading

FABRIC CUTTING

Prerequisites: *Basic Textiles; Introduction to the Cutting Function*

Suggested Hours: 16

Behavioral Objectives

This area of instruction should enable students to:

1. Learn the mechanics and adjustments of industrial fabric cutting machines.
2. Operate industrial fabric cutting machines.

Instructional Guidelines

This area of instruction is designed to teach the student the principles and operations of cutting machine mechanics, machine adjustments, maintenance and operation. The instructor will discuss the above factors during lecture sessions and demonstrate the equipment under simulated operating conditions.

During the laboratory sessions the student will operate the different types of industrial fabric cutting machines under the direct supervision of the instructor. These laboratory sessions will allow the students to fully develop their manipulative skills in operating industrial fabric cutting machines.

Teaching Modules

	Suggested Hours	
	Class	Laboratory
I. Machine Types: Mechanics, Adjustments and Operation	6	10
I. MACHINE TYPES: MECHANICS ADJUSTMENTS AND OPERATIONS		

Teaching Content

- A. Machine Types — Advantages and Disadvantages
 1. Up and Down Knives
 - a. Advantages
 - 1) Can cut sharp angles and curves
 - 2) More efficient safety devices
 - 3) Can cut higher
 - 4) More versatile

- b. Disadvantages
 - 1) More vibration
 - 2) Less stable
 - 3) Cuts slower
 - 4) Does not cut as clean an edge

2. Round knife
 - a. Advantages
 - 1) More stable
 - 2) Faster cutting
 - 3) Less noise and vibration
 - 4) Cleaner cut edge
 - b. Disadvantages
 - 1) Cannot cut sharp curves and angles
 - 2) Cannot cut high plies
 - 3) Less efficient safety devices

- B. Mechanics and Adjustments
 1. Lubrication of machines
 2. Changing blades in machines
 3. Safety features
 4. Blade sharpening devices
 - a. Band sharpener
 - b. Disc sharpener

Learning Experiences

1. Demonstrate machines, machine mechanics, and adjustments and all procedures to be followed in operating industrial fabric cutting machines.
2. Have students operate the following equipment under direct supervision of instructor:
 - a. Up and Down knife
 - b. Round knife (Disc knife)
 - c. Straight cutting
 - d. Angle cutting
 - e. Curved cutting
3. Have students change blades, lubricate machines, and change and adjust sharpening mechanisms.

Suggested Evaluation

Analytical report which demonstrates students' understanding of mechanisms and adjustments of both up and down machines and Round Disc machines as follows:

1. Machine identification

- a. Manufacturer
- b. Style
- c. Reciprocating
- d. Disc
- e. Model number

2. Machine analysis

- a. Voltage
- b. Length of blade cutting edge in inches
- c. Effective cutting height in inches
- d. Motor R.P.M.
- e. Blade R.P.M.
- f. Noise level (e.g. 1,2,3,4 or 5)
- g. Vibration level (e.g. 1,2,3,4 or 5)
- h. Visibility of cutting edge
- i. Safety devices or features

j. Sharpening method

k. Lubricating methods

l. Mobility

m. Machine Stability

Teaching Resources

TEXTS AND REFERENCES

Eastman Cutting Machine Manual. Eastman Machine Co.;
226 W. 37th Street; New York, N.Y. 10018

Maiman Cutting Machine Manual. Maiman Machine Co.;
575 Eighth Avenue, New York, N.Y. 10018

Solinger, J. *Apparel Manufacturing Analysis*

INSTRUCTIONAL SUPPLIES

- Up and down knives
- Round knives
- Fabric for cutting purposes

GARMENT PRESSING

Prerequisites: *Basic Textiles*

Suggested Hours: 16

Behavioral Objectives

This area of instruction should enable students to:

1. Become proficient in using different types of pressing machines for pressing.
2. Know how to change pressing machine padding.

Instructional Guidelines

This area of instruction will teach the student how to use industrial pressing equipment. A major module of instruction relates to pressing quality and how it is determined and achieved. The students will learn to press different fabrics with pressing machines. They will do underpressing and seam busting for various stages of garment construction, small parts pressing and finished garment pressing.

Teaching Modules

	Suggested Hours	
	Class	Laboratory
I. Quality	4	4
II. Pressing Machines	3	5
Total Hours — — —	7	9

I. QUALITY

Teaching Content

A. Identification of Adverse Quality

1. Scorching
2. Shine
3. Impressions
4. Distortion
5. Puckering
6. Creasing
7. Non-Flat seam
8. Crooked Seam

B. Causes and Remedy of Adverse Quality

1. Scorching
 - a. Cause: excessive dry heat
 - b. Remedy: low wet heat
2. Shine
 - a. Causes: excessive pressure
 - 1) Hard padding
 - 2) Oversteaming
 - b. Remedy: proper pressure
 - 1) Moderate padding
 - 2) Proper steaming
3. Impressions
 - a. Causes: excessive pressure
 - 1) Hard padding
 - 2) Oversteaming
 - b. Remedy: proper pressure
 - 1) Moderate padding
 - 2) Proper steaming
4. Distortion
 - a. Causes: pulling garment
 - 1) Pulling fabric
 - 2) High temperature
 - b. Remedy: lifting garment
 - 1) Proper hand tension
 - 2) Correct temperature
5. Puckering
 - a. Causes: incorrect temperature
 - 1) Pulling garment
 - 2) Excessive steam
 - b. Remedy: correct temperature
 - 1) Lifting garment
 - 2) Proper steam
6. Creasing
 - a. Causes
 - 1) Incorrect garment alignment
 - 2) Insufficient pressure
 - 3) Incomplete crease
 - b. Remedy
 - 1) Resteam to remove old crease
 - 2) Correct garment alignment
7. Non-Flat seam
 - a. Causes: insufficient pressure
 - 1) Not following stitch line

- 2) Insufficient steam and heat
- 3) Improper or poor padding
- b. Remedy
 - 1) Correct pressure, padding, steam
 - 2) Follow stitch line
8. Crooked seam
 - a. Causes
 - 1) Improper seam alignment
 - 2) Pulling or not holding material properly
 - b. Remedy
 - 1) Correct seam alignment
 - 2) Open seam without tension

Learning Experiences

Using hand irons and woolen fabric, students will press crease into fabric. Then using sample garment sections, students will press seams flat (open). Students will also press special seam construction. These pressings should be examined for the purpose of identifying quality check points.

II. PRESSING MACHINES

Teaching Content

- A. Basic Types (Operating Controls)
 1. Manual pressing machines
 2. Automatic air operated
 3. Form presses
- B. Sequence of Operations for Buck Presses
 1. Place on buck
 2. Lower the head (not locked) and apply steam
 3. Raise the head and shape the garment
 4. Close head (lock) and use high or low mechanical pressure; add steam if necessary

5. Release head and apply the vacuum dryer; shape

C. Sequence of Operations for Form Press

1. Drape garment over form
2. Make adjustments for size and shape and clamp
3. Steam
4. Heated air } Automatically timed
5. Unclamp and remove

Learning Experience

Using completed garments, students will press them on different types of machines.

Suggested Evaluation

Students will press, according to quality specifications established by the instructor, different types of garments such as shirts, blouses, dresses, slacks, etc. and be evaluated accordingly.

Teaching Resources

TEXTS AND REFERENCES

Solinger, J. *Apparel Manufacturing Analysis*

INSTRUCTIONAL SUPPLIES

- Garments in various stages of manufacture
- Garment parts
- Special seam constructions
- Variety of completed garments (shirts, slacks, dresses, blouses, etc.)

(Note: Samples for pressing should be made from varying fibers and fabric constructions.)

- 12" x 12" pieces of wool, acetate, and polyester fabric; some pieces should be sewn together using an SSI seam

CUT WORK PREPARATION

Prerequisites: *Fabric Lay-up (Spreading); Fabric Cutting*

Suggested Hours: 12

Behavioral Objectives

This area of instruction should enable students to:

1. Assort cut work by size, shade, color, operation, quantity and components.
2. Bundle and ticket cut work by size, color, shade, component and operation sequence.

Instructional Guidelines

This area of instruction is designed to teach students the principle techniques and methods of cut work preparation as they relate to assorting, bundling and ticketing and to develop the student's ability to use these techniques and methods. The instructor will emphasize the proper techniques and procedures to be followed in order to accomplish these tasks.

During the laboratory sessions, students should be given the opportunity to handle cut bundles in all three phases of preparation (assorting, bundling, and ticketing) under the direction of the instructor. These laboratory sessions will allow the students to develop their manipulative skills in these three major areas.

Teaching Modules

	Suggested Hours	
	Class	Laboratory
I. Assorting Cut Work	2	2
II. Bundling and Ticketing	4	4
Total Hours — — —	6	6

I. ASSORTING CUT WORK

Teaching Content

- A. Principles
- B. Methods
- C. Considerations in Assorting

1. Styles
2. Color and shade
3. Size
4. Operation
5. Quantity
6. Lot number

Learning Experiences

Students will assort cut work bundles following the above considerations under the direction and supervision of the instructor.

II. BUNDLING AND TICKETING CUT WORK

Teaching Content

- A. Principles
- B. Methods
- C. Considerations
 1. Quantity in bundle
 2. Components
 3. Operation sequence
 4. Size
 5. Shade and color

Learning Experiences

Students will ticket cut work bundles following the above considerations under the direction and supervision of the instructor.

Suggested Evaluation

Instructor will prepare sample tickets and simulated cut work bundles. Student will be evaluated on their ability to match appropriate tickets to simulated cut work bundles.

TEACHING RESOURCES

TEXTS AND REFERENCES

Frank, B. *The Progressive Sewing Room*
Solinger, J. *Apparel Manufacturing Analysis*

INSTRUCTIONAL SUPPLIES

- Bundles of cut work simulating parts of garments
- Sample tickets

FINISHING

Prerequisites: *None*

Suggested Hours: 8

Behavioral Objectives

This area of instruction should enable students to:

1. Know the techniques and practices of garment finishing.
2. Become proficient in such areas of garment finishing as ticketing, folding, packaging and trimming.

Instructional Guidelines

This area of instruction is designed to teach the students the principles and techniques of garment finishing. The laboratory sessions will give students the opportunity to work with garments in finishing operations and develop their manipulative skills in ticketing, trimming, folding and packaging.

Teaching Modules

	Suggested Hours	
	Class	Laboratory
I. Garment Finishing	4	4

I. GARMENT FINISHING

Teaching Content

- A. Trimming
 1. Major areas of trimming on garments
 2. Equipment used for trimming
 - a. Manual
 - b. Mechanical
- B. Ticketing
 1. Major types of tickets
 2. Equipment used for ticketing
 - a. Manual
 - b. Mechanical

C. Folding

1. Types of garments to be folded
2. Equipment for folding garments
 - a. Manual
 - b. Mechanical

D. Packaging

1. Types of garment packaging
2. Equipment for packaging garments
 - a. Manual
 - b. Mechanical

Learning Experiences

Students trim, tag, fold and pack various garments in order to be evaluated on their ability to apply correct procedures within a reasonable time.

Suggested Evaluation

Students will prepare a garment that has been trimmed, tagged, folded and packed and be evaluated on their ability to apply correct procedures within a given time.

Teaching Resources

TEXTS AND REFERENCES

Frank, B. *The Progressive Sewing Room*
Solinger, J. *Apparel Manufacturing Analysis*

INSTRUCTIONAL SUPPLIES

- Sample garments
- Equipment for finishing
 1. Automatic Bagging — Service Poly-Pak, 315 West 35th Street, New York, N.Y.
 2. Swiftacher — Dennison Fastner Co., 888 Seventh Avenue, New York, N.Y.
 3. Shirt Folder — Bishop Freeman Co. Evanston, Illinois
 4. Trim-Master — Cutting Room Appliances Co., 1134 Broadway, New York, N.Y.

INTERNAL WORK HANDLING

Prerequisites: *None*

Suggested Hours: 9

Behavioral Objectives

This area of instruction should enable students to:

1. Know how to store, dispatch and supply sewing operators with bundles of in-process inventory, trimmings and supplies.

Instructional Guidelines

This area of instruction is designed to instruct the student in the principles and techniques of in-process bundle handling in a sewing machine factory. The principle of in-process bundle handling will be discussed and during the laboratory sessions the students will have the opportunity to assort, store, and supply operators with bundles of in-process inventory. In addition the student will handle all required auxiliary equipment and trimming required by sewing machine operators. The laboratory sessions will allow the students to develop their manipulative skills in these areas.

Teaching Modules

	<i>Suggested Hours</i>	
	<i>Class</i>	<i>Laboratory</i>
I. Assorting, Storing and Distributing In-Process Inventory	6	3

I. ASSORTING, STORING AND DISTRIBUTING IN-PROCESS INVENTORY

Teaching Content

- A. Factors in Assorting, Storing and Distributing Bundles
 1. Style
 2. Size

3. Proximity to operator and sequence of operations
4. Quantity

B. Bundle Tickets: Information Recorded on Bundle Tickets

1. Size
2. Style
3. Color
4. Shade
5. Operation
6. Rate per dozen
7. Lot number

C. Factors in Distributing Trimming and Supplies

1. Operation
2. Proximity to operator
3. Sequence of operations
4. Color

Learning Experiences

Student will match bundles of in-process work (such as collars and bodies) in various stages of completion to each other in proper sequence. Student will also match threads, bindings, lace, trimmings as indicated by cut work and bundle tickets.

Suggested Evaluation

Instructor will use a diagram of sewing room which indicates where different operations are being performed. Students, using bundle tickets (prepared by instructor), will indicate where to store and distribute bundles and auxiliary equipment and supplies and be evaluated on their ability to do so correctly.

Teaching Resources

TEXTS AND REFERENCES

- Frank, B. *The Progressive Sewing Room*
Solinger, J. *Apparel Manufacturing Analysis*

INSTRUCTIONAL SUPPLIES

- Ticketed bundles of cut work simulating parts of garments
- Diagram of a sewing room

INTRODUCTION TO FASHION DRAWING

Prerequisites: *None*

Suggested Hours: 60

Behavioral Objectives

This area of instruction should enable students to:

1. Use fashion drawing as a direct and precise means of communication, facilitating visualization.
2. Draw the fashion figure with speed and flair.
3. Accurately represent design details.
4. Acquire a good sense of color, line and proportion.
5. Develop a presentation portfolio for employment interviews.

Instructional Guidelines

This area of instruction will introduce the student to the use of drawing as a means of symbolic communication. The occupational approach to fashion drawing stresses accuracy of representation, by means that can be learned by all students and do not require any unusual artistic talent or previous training. It is suggested that the student and instructor draw simultaneously throughout lecture demonstrations by the teacher.

Teaching Modules

	Suggested Hours	
	Class	Laboratory
I. Introduction	1	1
II. The Fashion Figure	6	6
III. Fashion Details	10	10
IV. Color	4	6
V. The Designer's Sketchbook	3	13
Total Hours — — —	24	36

I. INTRODUCTION

Teaching Content

A. Supplies and How to Use Them

1. Pencils or mechanical drawing pencil with HB, 2B, 3H leads
2. Felt-tipped pens in various colors
3. Ledger drawing paper 8½" x 11"

4. Tracing paper pad 8½" x 11"
5. Kneaded eraser
6. Sandpaper block
7. Water color set (Grumbacher Symphonic)

B. Related Basic Body Shapes

1. Circles
2. Ovals
3. Cylinders
4. Squares
5. Triangles
6. Geometrics

Learning Experiences

Have students practice:

1. Relating basic geometric shapes to the body.
2. Control of pencil line.

II. THE FASHION FIGURE (THE CROQUIS)

Teaching Content

A. Proportions

1. The concept of a number of "Heads" to the body
2. Relationships of various parts of the body

B. Positions of the Figure

1. Front view
2. ¾ view
3. Back view
4. Action

C. Head: Features and Hair Styles

1. Front view
2. ¾ view
3. Profile

D. Hands and Feet

1. Simplest geometric approach
2. Proportions and relationship of details
3. Shoes

Learning Experiences

Have students:

1. Draw two figures simultaneously in different sizes.
2. Working from reference figures, do original drawings of the undressed croquis in various poses.
3. Practice drawing heads.

4. Practice drawing feet and hands in several positions and include various shoe styles.

III. FASHION DETAILS

Teaching Content

- A. Necklines
 1. Round: high and low
 2. Square
 3. V neckline, surplice
- B. Closings
 1. Zipper
 2. Buttons: single and double breasted
 3. Belts and buckles
- C. Stitching
 1. Top stitching
 2. Tucks
 3. Embroidery
- D. Collars
 1. Round: peter pan, bertha, cape, sailor
 2. Straight: convertible, two piece shirt, mandarin, band, turtle neck
 3. Tailored: shawl, notched
- E. Sleeves
 1. Straight: long, $\frac{3}{4}$, short, cap
 2. Extra fullness: shirtwaist, bishop, puff, leg o' mutton
 3. Unmounted: dolman, kimono
 4. Unusual armholes: squared, raglan
 5. Cuffs: plain, french, turned up
- F. Fitting Lines
 1. Darts
 2. Seams
 3. Gathers: ruffles
 4. Tucks
 5. Godets
- G. Skirts
 1. Straight
 2. Flared: A-line, circular, bell
 3. Pegged
 4. Gathered: soft, dome
 5. Pleats: side, box, accordion, sunburst
- H. Slacks
 1. Long: straight, tapered, flared
 2. Shorts: short, walking shorts
 3. Culottes
- I. Silhouettes
 1. Shift
 2. Sheath
 3. Empire
 4. Blouson

5. Princess
6. Fitted and flared

Learning Experiences

1. Have students draw examples of:
 - a. Various necklines using a croquis
 - b. Stitching on fabric
 - c. Different types of slacks
 - d. All sleeves discussed in module
 - e. Closings
2. Have students:
 - a. Design a blouse on the half figure and attach suggested fabric swatch
 - b. Design a skirt and blouse, full figure, and swatch
 - c. Design a long evening dress and swatch
 - d. Design a short day dress and swatch

IV. COLOR

Teaching Content

- A. What is Color?
 1. Light
 2. Wavelength
 3. Color associations
 - a. Serenity: conflict
 - b. Warm: cool
 - c. Advancing: receding
 4. The Color wheel
 - a. Primary colors
 - b. Secondary colors
 5. Definitions
 - a. Hue
 - b. Value
 - c. Intensity
 6. Color schemes
 - a. Monochromatic
 - b. Complementary
 - c. Analogous
- B. How to Lay a Flat Wash
- C. How to Paint Heads
- D. How to Paint Garments (segments, details)

Learning Experiences

- Have students:
1. Paint squares in various colors
 2. Arrange painted squares in pleasing combinations
 3. Paint various heads
 4. Paint an illustration of garment shown in class

V. THE DESIGNER'S SKETCH BOOK

Teaching Content

- A. Designing a Line

1. Seasonal consideration
2. Designing "groups"
 - a. Style statement
 - b. Color statement
 - c. Fabric statement
3. Defining the customer

B. General Garment Categories

1. Dresses
 - a. Day
 - b. Evening
 - c. Housedresses
2. Sportswear
 - a. Bathing suits
 - b. Slacks and shorts
 - c. Skirts
 - d. Jumpers
 - e. Blouses
 - f. Jackets
 - g. Riding clothes
 - h. Ski wear
3. Coats and suits
4. Intimate apparel
 - a. Lounge wear and robes
 - b. Lingerie
 - c. Foundation garments
 - d. Sleepwear
5. Knitwear and sweaters
6. Men's clothing
7. Men's sportswear
8. Men's shirts
9. Children's clothing
 - a. Dresses } Girls
 - b. Sportswear }
 - c. Outerwear: boys and girls
 - d. Sleepwear and robes: boys and girls
 - e. Infants wear: boys and girls
 - f. Boy's wear

Learning Experiences

1. Have students visit local retail stores. From actual garments, assign students to sketch a current ex-

ample of a number of the categories discussed in class.

2. Have students select three major categories discussed in class, design ten trade sketches for each selected category, and swatch each sketch with suggested fabric.

Suggested Evaluation

Each completed plate in the learning experiences is to be submitted to the instructor with a tracing paper overlay. The instructor can then make drawing corrections without changing the student's work. As a result the student can compare his original work with the corrected plate. Verbal instructions and suggestions can also be added to the corrections on the overlay. The student's competency is measured by the rendered solution of the problem. Problems should be evaluated in terms of originality, independence, and clarity of execution. Evidence of professional standards will merit the highest evaluation.

Teaching Resources

TEXTS AND REFERENCES

Fashion Art for Designers, Fashion Institute of Technology College Shop, 227 W. 27th Street, New York, N.Y. 10001

Ireland, P. *Fashion Design Drawing*

Sloan, E. *Illustrating Fashion*

Westerman, M. *Elementary Fashion Design and Trade Sketching*

INSTRUCTIONAL SUPPLIES

- Fabric swatches and larger pieces of fabric in various textures
- Sketches illustrating how other artists have solved problems
- Actual garments to be used as models
- Live models whenever possible

GARMENT CONSTRUCTION

Prerequisites: *None*

Suggested Hours: 60

Behavioral Objectives

This area of instruction should enable students to:

1. Operate cutting, sewing and pressing equipment used by sample makers and dressmakers.
2. Perform the basic hand and machine operations in garment construction.
3. Cut, assemble and press garments using industrial patterns.
4. Understand the use of backings, interlinings and linings.
5. Construct simple tailoring details.

Instructional Guidelines

This area of instruction is based on garment construction practices used in manufacturer's sample rooms and in dressmaking establishments. Students learn to operate power sewing machines and industrial steam hand irons as well as the hand tools commonly used in industry. Sample garments, constructed by students, are cut from industrial patterns. These lend themselves to individual interpretation and students should be encouraged to express their creative talent wherever appropriate. As a result, a variety of individualized garments should be produced by the class.

Emphasis should be placed on the basic principles of garment construction rather than individual problems, so that the student will be able to assemble any type of garment in the future. The teaching content is presented to students with lectures and demonstrations. Extensive illustrative material showing the step by step construction of garment details is essential for clarity in demonstrations and subsequent reference by the student. Learning experiences are structured so that the student has an opportunity to practice newly acquired skills. These learning experiences range from the construction of a simple apron requiring only elementary operations to the rather

complex construction of a lined jacket. Although talented, highly motivated students will achieve an adequate measure of skill in the various operations, emphasis should be placed on the understanding of construction methods rather than on skilled operations per se. To develop the skill and speed of a garment operator would require more intensive practice than time permits. Instead, students should, at the end of this area of instruction, have a solid understanding of garment construction upon which to base further studies in pattern development and apparel design.

Teaching Modules

	Suggested Hours	
	Class	Laboratory
I. Introduction to Equipment in Garment Construction	2	3
II. Elementary Operations in Garment Construction	3	6
III. Required Operations in Skirt Construction	4	8
IV. Required Operations in Dress Construction	5	12
V. Required Operations in Simple Tailored Garment Construction	5	12
Total Hours — — —	19	41

I. INTRODUCTION TO EQUIPMENT IN GARMENT CONSTRUCTION

Teaching Content

A. Hand Tools and Supplies

1. Scissors
 - a. Type and function
 - b. Safe and proper handling
2. Measuring devices
 - a. Tape measure
 - b. Ruler
3. Pins
4. Needles
 - a. Type and function
 - b. Safe handling

5. Thread: type and function
 - a. Fiber
 - b. Finish
 - c. Size
 - d. Color
 6. Marking equipment
 - a. Tracing wheel
 - b. Tracing paper
 - c. Stone chalk
 7. Fabric
 - a. Basic construction
 - 1) Woven
 - 2) Knit
 - 3) Felt
 - b. Grain
- B. The Industrial Steam Hand Iron
1. Elements in pressing
 - a. Heat
 - b. Moisture
 - c. Pressure
 - d. Time
 2. Pressing techniques
- C. The Power Sewing Machine (Lockstitch)
1. Function of the lockstitch machine
 2. Parts of the lockstitch machine and their function
 - a. Tension
 - b. Take-up
 - c. Presser foot
 - d. Feed dog
 - e. Throat plate
 - f. Bobbin and bobbin case
 - g. Stitch size regulator
 - h. Lubrication
 3. Operating the power machine
 - a. Power and speed control
 - b. Threading
 - c. Stitching techniques
 - 1) Straight sewing
 - 2) Angular sewing
 - 3) Curved sewing
 - d. Minor mechanical adjustments

Learning Experiences

1. In order to learn to recognize grain and practice cutting with scissors, students cut muslin for stitching samples:
 - a. Three pieces of muslin; 6 inches on the lengthwise grain by 12 inches on the crosswise grain.
 - b. One 8-inch diameter circle, cut from a paper pattern.
2. To practice the use of pressing equipment, have students:

- a. Block and press muslin rectangles.
 - b. Fold and press rectangles in half to form 6-inch squares.
 - c. Press the 8-inch muslin circle.
3. To practice sewing on the power machine, have students sew the following stitching samples:
 - a. Straight, parallel sewing
 - b. Sewing squares
 - c. Angular sewing
 - d. Sewing circles

II. ELEMENTARY OPERATIONS IN GARMENT CONSTRUCTION

Teaching Content

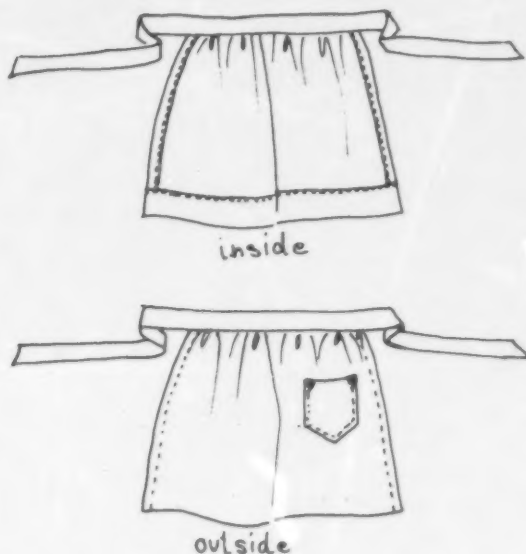
- A. Cutting Fabric for a Very Simple Garment (Apron)
1. Planning length, including hem and seam allowances
 2. Planning width
 3. Planning the waistband
 4. Planning a patch pocket
- B. Hand Sewing Operations
1. Uneven basting – center front thread tracing
 2. Even basting
 3. Blind hem stitching
- C. Machine Operations
1. Tacking
 2. Edge stitching
 3. Machine hemming
 4. Top stitching a pocket
 5. Machine shirring
 6. Stitching and turning a sash
 7. Enclosing a gathered edge with a belt

Learning Experiences

The student plans and constructs a half apron (as following illustration below) with a patch pocket. Woven cottons or cotton blends are most suitable. In order to practice the operations presented in this module, have students:

1. Cut apron.
2. Thread trace center front.
3. Baste tie ends of belt.
4. Machine stitch tie ends of belt and tack at the start and finish of seam.
5. Turn back $\frac{1}{4}$ -inch and edge stitch the lower edge of the apron.
6. Machine hem the sides of apron with a 1-inch hem.
7. Turn up a 2-inch hem at the lower edge of apron, baste $\frac{1}{4}$ -inch from the folded edge and blind stitch hem.

8. Hem upper edge of pocket and turn in seam allowance all around.
9. Pin and baste pocket as desired on apron and top stitch into place.
10. Shirr upper edge of apron and draw up shirring to fit open area of belt.
11. Pin, baste and machine stitch shirred edge of apron to belt.
12. Finish belt by hand with small hemming stitches.



III. REQUIRED OPERATIONS IN SKIRT CONSTRUCTION

Teaching Content

- A. The Industrial Pattern — Pattern Markings
 1. Identification number
 2. Size
 3. Garment piece
 4. Grain
 5. Notches
 6. Punch holes
- B. The Cutting Layout
 1. Width of fabric: various folds
 2. Grain
 3. Matching stripes and plaids
 4. Marking the pattern
 - a. Paper
 - b. Fabric
- C. Marking Sewing Lines
 1. Carbon markings
 2. Thread tracing

D. Various Seam Finishes

1. French seam
2. Flat felled seam
3. Pressed open seam
 - a. Edge stitch finish
 - b. Hand overcast edge
 - c. Stitched and pinked edge

E. Inserting a Welt Zipper

F. Constructing an Interfaced Waistband

G. Attaching Hooks and Eyes by Hand

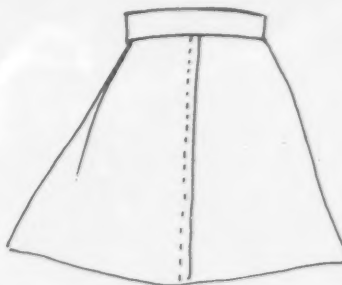
H. Sewing a Circular Hem with Seam Binding

Learning Experiences

In order to practice the operations presented in this module, the student sews a four gore skirt from an industrial pattern. Any firmly woven fabric may be used.

It is suggested that each seam in this skirt be finished differently so that various seam constructions may be applied: for example,

- | | |
|-------------------|----------------------------------|
| Center back seam | — French seam |
| Center front seam | — Flat felled |
| Side seam A | — Pressed open and edge stitched |
| Side seam B | — Pressed open and overcast |

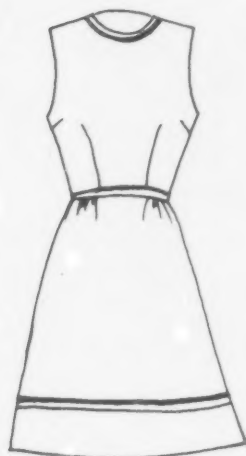


IV. REQUIRED OPERATIONS IN DRESS CONSTRUCTION

Teaching Content

- A. Backing (Underlining)
 1. Function of backing
 2. Fabrics suitable for backing
 3. Cutting backing
- B. Assembling a Garment Using the Unit Construction Method
 1. Completion of small units
 - a. Sleeves
 - b. Collar
 - c. Facings

- d. Belt
 - e. Patch pockets
 - 2. Completion of large units
 - a. Bodice front
 - b. Bodice back
 - c. Skirt front
 - d. Skirt back
 - 3. Basting large units together for fitting
 - 4. Making adjustments and stitch garment units together
 - 5. Inserting zipper
 - 6. Hand finishing
 - C. Basting in Preparation for the First Fitting
 - D. Fitting a Dress
 - E. Stitching Darts
 - F. Finishing Necklines — Shaped Facings and Interfacing
 - 1. Round neckline
 - 2. Square neckline
 - 3. Slashed neckline
 - G. Bias Binding and Piping Finishes
 - 1. Cutting bias strips
 - 2. Bias facing
 - 3. Edge stitched binding
 - 4. French piping
 - 5. Flat and corded piping
 - 6. Bias tubing
 - H. Skirt and Bodice Joining
 - I. Inserting a Long Neckline Zipper — Centered Applications
 - J. Finishing a Hem with Bias Binding
- Learning Experiences



The student constructs a simple sleeveless dress (as illustrated) from an industrial pattern. Fabric choice may be left to the student, but backing must be used in this garment. If desired, the round neckline may be shaped in various ways by adjusting the pattern on the dress form. The student then cuts a facing to fit the new neckline. Armholes are finished with a bias facing. The dress is fitted on the dress form. Students should be encouraged to use trimmings or color combinations to give the dress a touch of originality.

V. REQUIRED OPERATIONS IN SIMPLE TAILORED GARMENT CONSTRUCTION

Teaching Content

- A. Lining and Interlining
 - 1. Function of each
 - 2. Suitable fabrics
- B. Buttonholes
 - 1. Marking
 - 2. Construction
 - a. Machine worked
 - b. Hand worked
 - c. Bound
 - 1) Corded
 - 2) Patch
- C. The Tailored Collar
- D. Jacket Fitting
- E. Joining Collar and Facing to Jacket
- F. Sleeve Construction
 - 1. Simple fitted — hem
 - 2. Shirtwaist
 - a. Placket
 - b. Cuff
 - 3. Setting in sleeve
- G. Lining
 - 1. Cutting
 - 2. Stitching
 - 3. Fitting into garment
- H. Hand Finishing on Tailored Garments
 - 1. Hem
 - 2. Lining
 - 3. Buttonholes
 - 4. Buttons
 - 5. Snap fastners

Learning Experiences

Students construct a lined jacket. Although any type of fabric may be used, experience in the handling of wool or wool type fabrics is desirable. In the process of working on this project, the student applies some of the simple tailoring techniques required in most

sample rooms and dressmaking establishments. There should be a choice of collar and sleeve patterns (as illustrated) available to students, so that styles appropriate to the fabric selected may be developed.



Suggested Evaluation

Evaluation of student work should be based on the student's ability to construct a garment, according to industry standards, from an industrial pattern. The learning experiences provide the opportunity for students to demonstrate their accomplishments in this area. In addition, students may be given a sketch and a cut garment and be evaluated on their ability to assemble this garment without further instruction. Evaluation should be in terms of efficient method of assembly, appropriate construction of details and accurate interpretation of the sketch.

Teaching Resources

TEXTS AND REFERENCES

Coats and Clark's Sewing Book

Construction Technology. College Shop, Fashion Institute of Technology; 227 West 27th St., New York, N.Y. 10001

Reich, Berman & Hager. *Essentials of Clothing Construction*

INSTRUCTIONAL SUPPLIES

- Examples of all supplies listed in Module I
- Eight inch paper circles to be used as patterns
- Oak tag patterns in sizes 6, 7, 8, 9, 10, (same as dress form)
 1. Four gore skirt
 2. Dress; basic waist and A-line skirt
 3. Jacket; fitted with princess seams
 4. Various collars and sleeves to fit the jacket
- Marking paper
- Interfacing, backing and lining fabrics
- Muslin
- Work samples showing step by step development of construction details
- Finished sample garments

Career Advancement Instruction

FABRIC UTILIZATION (MARKER MAKING)

Prerequisites: *Basic Textiles; Fabric Lay-Up; Fabric Cutting*

Suggested Hours: 45

Behavioral Objectives

This area of instruction should enable students to:

1. Understand the principles of pattern placement.
2. Make different kinds of markers.
3. Plan markers in accordance with order requirements.
4. Make markers that require special manipulation.
5. Prepare and make multiple markers.

Instructional Guidelines

When this area of instruction has been completed by the students, they should be able to make different kinds of marker layouts (pattern placements) which conform with sewn product (industry) usage.

Beginning with the concept of yield (the efficiency exercised in using the area of the marker), this area of instruction addresses itself to the concepts and techniques of marker making. The student will also make various types of markers that touch upon different specialized pattern manipulations.

The quality of the finished product is created in the first steps of the manufacturing cycle. Marker quality and its relationship to cost of manufacture must be emphasized. The pattern layout is an integral part of the manufacturing system. The subsequent steps taken in the manufacture of the product are related to how the marker has been made.

This area of instruction will also show industry practice in the creation of duplicate markers.

It is suggested that full sets of patterns representing four consecutive garment sizes using quarter scale patterns be given to the students. The same patterns in full size (scale) should also be given to the students. (These patterns are to be lettered size A for the first size through size D for the last size.)

The students will make different types of markers in quarter scale and in full scale, both as single markers and as duplicate markers. The beginning markers will be basic and relatively simple. As students progress through the course they will make markers that involve special manipulations that are cumulatively more difficult.

Teaching Modules

	Suggested Hours	
	Class	Laboratory
I. Principles of Pattern Placement	3	3
II. Marker Types	3	12
III. Order Control	2	6
IV. Special Handling	3	9
V. Duplicating Systems	1	3
Total Hours — — —	12	33

I. PRINCIPLES OF PATTERN PLACEMENT

Teaching Content

A. Marker Making Procedure

1. Relationship between fabric width and marker width
2. Procedures
 - a. Drawing in right end line selvage lines
 - b. Laying out patterns
 - 1) Largest parts first — by size or area
 - 2) Blocking patterns
 - a) Straight line
 - b) Oblique straight line
 - c) "L" shape
 - d) Vertical step
 - e) Oblique step
 - f) Symmetrical sawtooth
 - g) Asymmetrical sawtooth
 - 3) Placing intermediate parts on marker
 - a) Small pattern parts fitted into open areas of marker last
 - b) Larger patterns are not moved to fit smaller parts in
 - 4) Finishing of marker -- marker end line a straight line

B. Determination of Marker Yield Efficiency

1. Total fabric consumed and relationships
2. Total fabric used in product

C. Marking Quality

1. Adherence to pattern grain lines
2. Completeness of patterns (no overlapping)
3. Cutting clearance
4. Line clarity
5. Appropriate pattern identification, including style number
6. Pattern location identification
 - a. Notches
 - b. Punch holes
7. Completeness of number of patterns

Learning Experiences

Using miniature and full size patterns, have students mark all grain lines, notches, parts identification on both sides of all patterns and make the necessary punch holes.

II. MARKER TYPES

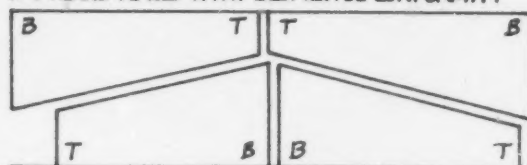
Teaching Content

A. Concept of Pattern Direction

1. Direction of all patterns
 - a. Beginning at top, neck or waist
 - b. Going to bottom, hem or cuff
2. Conformity to fabric nap direction (assuming it exists on all patterns)

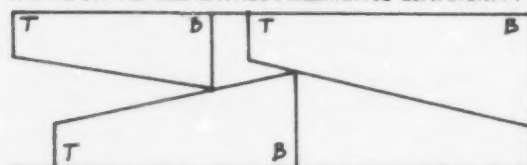
B. Concept of Geometric Conformity

PATTERNS PLACED WITH GEOMETRIC CONFORMITY



T = TOP OF PATTERN B = BOTTOM OF PATTERN

PATTERNS PLACED WITHOUT GEOMETRIC CONFORMITY



T = TOP OF PATTERN B = BOTTOM OF PATTERN

1. Patterns placed *with* geometric conformity
2. Patterns placed *without* geometric conformity

C. The One-Way Marker

1. No geometric conformity
2. Highest pattern (placement) constraint
3. All patterns run in same direction
4. Poorest yield
5. Highest fabric cost

ONE WAY MARKER

T 1/2 FRONT B T 1/4 COLLAR B T 1/4 BACK B
T 1/4 FRONT B T 1/2 BACK B T 1/2 COLLAR B

T = TOP OF PATTERN B = BOTTOM OF PATTERN

D. The Up and Down Marker

1. Constrained geometric conformity
2. Intermediate pattern (placement) constraint
 - a. All patterns representing a complete garment run in same direction
 - b. All garment patterns do not have to run in same directions
3. Intermediate yield
4. Intermediate fabric cost

UP AND DOWN MARKER

B 1/2 FRONT T T 1/4 COLLAR B T 1/4 BACK B
T 1/4 FRONT B B 1/2 BACK T B 1/2 COLLAR T

T = TOP OF PATTERN B = BOTTOM OF PATTERN

E. The Either-Way Marker

1. No pattern (placement) constraint
2. Patterns placed in any direction if on grain
3. Maximum yield
4. Lowest fabric cost

EITHER WAY MARKER

T 1/2 FRONT B T 1/4 BACK B T 1/2 COLLAR B
T 1/4 COLLAR B B 1/4 FRONT T B 1/2 BACK T

T = TOP OF PATTERN B = BOTTOM OF PATTERN

F. Marker Identification

1. Identification
 - a. Marker type
 - b. Number of units
 - c. Size arrangement
 - d. Marker width (full scale)

- e. Marker length (full scale)
- f. Style number
2. Placement
 - a. Right side of marker
 - b. Outside of rolled marker

Learning Experiences

Using the miniature patterns prepared in Module I laboratory project, have students make and identify each of the following markers:

1. One-Way for four sizes, one unit of each size.
2. Up and Down for four sizes, one unit of each size.
3. Either-Way for four sizes, one unit of each size or using full size patterns, Either-Way for four sizes, one unit of each size.

III. ORDER CONTROL

Teaching Content

- A. Relationships
 1. Order requirements
 2. Marker types
- B. The Non-Sectioned Marker
 1. Random pattern placement in accordance with marker type
 2. Cutting by dozens in multiples of 12
 3. Illustration

FRONT A	FRONT D	BACK A	BACK D
BACK B	BACK C	FRONT B	FRONT C

4. Explanation: three ply of fabric the length of the marker, when cut, will provide enough parts for 12 garments.

- C. The Sectioned Marker
 1. Constrained pattern placement in accordance with marker type (marker type dictates placement of patterns regarding direction.)
 2. Cutting by dozens (sections must be structured according to cutting order)
 3. Example: cutting order calls for four A and D garments, and two B and C garments per dozen
 - a. Illustration

FRONT A FRONT D	BACK C FRONT B
BACK D BACK A	BACK B FRONT C
SECTION 1	SECTION 2

- b. Explanation — Two ply of fabric the length of the marker (section 1 and section 2) and two ply of fabric the length of section 1, when cut, will provide enough parts to meet the order

4. Straight lines between marker sections (See Module I — Blocking of Patterns)

Learning Experiences

Have students:

1. Make the marker described above. Compare marker length to previously made markers.
2. Make a marker having sizes A, B, C in the left section and size D in the right section. Compare marker length to previously made markers.

IV. SPECIAL HANDLING

Teaching Content

- A. Border (fabrics) Patterns
 1. Vertical placement
 2. Horizontal placement
 3. Single vs. double border patterns
- B. Striped (fabric) Patterns (Vertical and Horizontal)
 1. Vertical alignment
 2. Horizontal alignment
 3. Degree of balanced match vs. cost of finished product
- C. Plaid (fabric) Patterns
 1. Identification of repeats
 2. Vertical alignment
 3. Horizontal alignment
 4. Quality and fabric utilization
 - a. Balanced match
 - b. Fabric spreading (lay-up) waste
 - c. Cost of finished product

Learning Experiences

Using quarter scale patterns, have students:

1. Make a four size non-sectioned, either-way marker for a garment that has a border print two inches on either side of its center front seam (the length of the garment).
2. Using the same patterns, make a four size, either-way, non-sectioned marker for a garment that has stripes in the filling direction of the fabric.
3. Using the same patterns, make a four size, either-way, non-sectioned marker for a plaid garment. This garment must have vertical and horizontal plaid alignment. Yardage (cost) comparisons should be made with all previous markers.

V. DUPLICATING SYSTEMS

Teaching Content

- A. Marking on Carbon
 - 1. Single faced carbon
 - 2. Double faced carbon
- B. Marking on Chemical Paper
- C. The Perforated Marker
- D. Photostated, Ozalid or Ditto Reproduction

Learning Experiences

Using full size patterns, and using one of the previously made quarter scale markers as a model, have students prepare a carbon reproduced marker. Make an original and two copies.

Suggested Evaluation

Students will use the complete set of full-scale patterns to make a four size non-section marker with two carbon duplicates for 42-inch width fabric. This marker should be completed and the table cleared in three hours, and it should be evaluated on its conformity to the principles of pattern placement.

Teaching Resources

TEXTS AND REFERENCES

Apparel Engineering and Needle Trades Handbook
Silverman, M. *Marker-Making Manual*
Solinger, J. *Apparel Manufacturing Analysis*

INSTRUCTIONAL SUPPLIES

- Patterns (as described in Instructional Guidelines)
- Commercial pattern making paper
- Marker duplicate paper
- Marking carbon paper
- Awls, notchers, hand-stapling machines

QUALITY CONTROL

Prerequisites: *Basic Textiles*

Suggested Hours: 35

Behavioral Objectives

This area of instruction should enable students to:

1. Identify the quality specifications exhibited by the functional areas of the apparel production system, including fabric quality, marker quality, spreading quality, cutting quality and sewing quality.
2. Be proficient in final inspection of sewn products in conformity with accepted industry procedure.

Instructional Guidelines

This is designed to instruct students in what to look for when inspecting fabric, markers, spreading, cutting, sewing and the appearance of the product in readiness for customer distribution. Quality specifications are identified for each of these manufacturing steps. The student will also learn how to handle a finished garment when evaluating its quality characteristics.

A definitive understanding of all of the quality specifications is fundamental. Instruction and laboratory sessions will require fabric and garment samples that are prepared by the instructor. A quantity of 3" x 9" swatches (in any woven fabric) will also be required. These instructional materials are the core of this area of instruction. For lectures, examples must be shown of good quality and poor quality. For laboratories, the student is to be given fabric, parts, garments, etc. that have imperfections.

They must identify (quality) inconsistencies in all phases of the manufacturing cycle. The teacher will judge the students ability to quickly identify these imperfections.

Teaching Modules

	<i>Suggested Hours</i>	
	<i>Class</i>	<i>Laboratory</i>
I. Fabric Quality Specifications	2	2

II. Marker Quality Specifications	4	3
III. Spreading Quality Specifications	2	2
IV. Cutting Quality Specifications	2	2
V. Sewing Quality Specifications	4	8
VI. Garment Quality Aspects	2	2
Total Hours — — — —	16	19

I. FABRIC QUALITY SPECIFICATIONS

Teaching Content

- A. Hand Characteristics
 1. Elongation
 2. Elasticity
- B. Tactile Characteristics
- C. Visual Characteristics
 1. End-to-end shading
 2. Side-to-side shading
 3. Dye or bleach marks
- D. Physical Characteristics
 1. Holes in fabric
 2. Lace-joints
 3. Bowing
 4. Yarn pulls
 5. Dimensional stability

Learning Experiences

Students are given fabrics having imperfections in them. Have students find and identify defects.

II. MARKER QUALITY SPECIFICATIONS

Teaching Content

- A. Marker width
 1. Constant for length or marker
- B. Pattern Grain Alignment
- C. Line Value
 1. Clarity
 2. Completeness

- D. Pattern Value
 - 1. Overlapping
 - 2. Dimensions
- E. Knife Clearance Freedom
 - 1. Cutting manipulation tolerance
 - 2. Crowding of patterns
- F. Location Identification Marks
 - 1. Notches: capped
 - 2. Punch holes: circled
- G. Appropriate Labeling
 - 1. Style number
 - 2. Size
 - 3. Part identification
- H. Pattern Count
 - 1. Total number
 - 2. Vertical facing
- I. Pattern Direction
 - 1. Nap direction
 - 2. Design direction

Learning Experiences

Give students markers having imperfections in them.
Have students identify these defects.

III. SPREADING QUALITY SPECIFICATIONS

Teaching Content

- A. Table Edge Alignment: Consistency
- B. Ply Alignment
 - 1. Major selvage edge
 - 2. Widest ply on bottom to narrowest ply on top
 - 3. Warp direction
 - 4. Filling direction
- C. Ply Tension
 - 1. Natural
 - 2. Selvages even
- D. Grain Alignment: Bowing
- E. Splicing: Economy
- F. Spreading Direction: Procedure Conformity

Learning Experiences

The instructor will lay-up a spread having the above mentioned deviations and have students indicate the exact point of imperfection and identify the defect.

IV. CUTTING QUALITY SPECIFICATIONS

Teaching Content

- A. Pattern Deformity

- 1. Frayed edges
- 2. Fused edges
- B. Pattern Precision
 - 1. Conformity to specifications throughout lay
 - 2. Notches
 - 3. Punch-holes
- C. Yarn Pulls
- D. Cut Down

Learning Experiences

Give students bundles of cut parts that have imperfections in them. Have students identify defects.

V. SEWING QUALITY SPECIFICATIONS

Teaching Content

- A. Stitch Size
 - 1. Length (stitches per inch)
 - 2. Width
 - 3. Depth
- B. Stitch Tension
 - 1. Fabric compression
 - 2. Balance
- C. Stitch Sequence-Precision
- D. Stitching or Seam Elongation (breaking point)
- E. Stitching or Seam Elasticity
 - 1. Resilience
 - 2. Elongation
- F. Fabric Distortions
 - 1. Fusion
 - 2. Gathering
 - 3. Pinching
 - 4. Puckering
 - 5. Ruffling
 - 6. Shirring
 - 7. Stretching
 - 8. Torsion
- G. Seam Size
 - 1. Seam depth and tension
 - 2. Seam width
- H. Seam Allowance – Consistency
- I. Seam style
 - 1. Eye appeal: geometric appearance
 - 2. Tactile appeal: feel

Learning Experiences

Using 3" x 9" swatches, have students prepare samples that represent each of the aforementioned sewing defects. (Each should be labeled.)

VI. GARMENT QUALITY ASPECTS

Teaching Content

A. Appearance

1. The sample
 - a. Specifications
 - b. The specification sheet
2. Dimensional specifications: points of fit
3. Drape
4. Balance
 - a. Shoulder seams to points of collar or neck
 - b. Shoulder seams to cuffs or sleeve ends
 - c. Neck line to waist line
 - d. Symmetry and alignment of part placements (patch pockets)
5. Visual characteristics
 - a. Part shades or patterns
 - b. Fabric damages
6. Seam structure
 - a. Complete
 - b. Correct (re: specifications)

B. Whole Garment Examination Evaluation Techniques

1. Inside of garment
 - a. Seam structure: examination pattern
 - b. Dimensional conformity
2. Outside of garment
 - a. Visual characteristics

b. Balance

3. Garment on hanger: drape

Learning Experiences

Give students finished garments that have quality defects and specifications for those garments. Have students examine garments and indicate quality defects. Students who are involved in supervisory training will also indicate methods for overcoming these defects.

Suggested Evaluation

Instructor will prepare garments in each of which there are approximately 8 defects. Students will identify these various defects in order to find as many as possible. If possible, each student should be given 3 garments to examine (garments can be rotated among students) and be evaluated on their ability to quickly and correctly identify defects.

Teaching Resources

TEXTS AND REFERENCES

Solinger, J. *Apparel Manufacturing Analysis*

INSTRUCTIONAL SUPPLIES

- Fabric and garment samples (as described in Instructional Guidelines)
- 3" x 9" woven fabric swatches

INTRODUCTION TO PATTERN DEVELOPMENT

Prerequisites: *Garment Construction*

Suggested Hours: 170

Behavioral Objectives

This area of instruction should enable students to:

1. Drape and draft garment patterns for design and production purposes.
2. Use each method appropriately in order to achieve maximum efficiency and accuracy.
3. Apply draping and pattern drafting principles and techniques when constructing an original sample or duplicate garments.

Instructional Guidelines

This area of instruction is intended to simultaneously develop a facility in both of the recognized methods of making garment patterns. When new silhouettes are developed, most designers and patternmakers prefer to work by *draping* the new design in fabric. Exact proportions and new shapes become readily apparent as the designer cuts directly into muslin, an inexpensive fabric used for this purpose. On the other hand, once the basic shape has been established and a pattern for a particular silhouette has been perfected, variations can be achieved more rapidly and accurately with the *pattern drafting* method. Sleeves and certain types of tailored collars are almost always drafted rather than draped. Also, when a model form is not available, patterns can be drafted from measurements. This method is reasonably satisfactory as long as refinements of line are eventually achieved by fitting on a model.

Draping and pattern drafting are here introduced simultaneously. The program should be flexible enough so that as the students achieve the necessary skills, they can make use of either or both methods, whichever is more suitable to the problem at hand.

Competence in pattern development is required for a number of occupations and careers in the apparel

industry. For the industry patternmaker and grader, it is of primary importance to make an accurate pattern for a duplicate in stock sizes. Stock sizes differ from sample sizes in many firms. The sample size is elongated and more elegantly proportioned to fit the show room model, whereas stock sizes fit the average consumer. Patternmakers must be able to subtly alter the proportions without changing the style of the original sample, and since their pattern will be used to cut garments in great quantity, precision is essential.

On the other hand, fashion designers learn to develop patterns so that they can give form to their ideas. Since, in most cases, the designer is developing an original sample and must experiment with new lines, creative freedom for design students should be stressed rather than absolute precision. It is important to remember that the end product of a designer's work is a beautiful sample garment rather than a precise pattern. For the future designer, pattern development is "design," for it is here that roughly sketched ideas begin to assume shape and reality.

Dressmakers, sample makers, duplicate makers, fitters and alteration hands should also have some background in pattern development. Competence on the level required by patternmakers and designers is not essential for these occupations, but the recognition of correct grain position, proper fit, and the good sense of proportion needed by all these people, can best be learned in the study of pattern development.

To allow for the differences in career aims of students, the instructor must make individual adjustments in procedure and evaluation of student progress. Design students should be required to work out patterns for original ideas throughout the learning experiences. Allowances should be made to give time for experimentation, and work should be evaluated on the basis of creativity as well as accuracy. Future patternmakers and those primarily interested in dressmaking careers should work out patterns from garment samples. If those are not available, photographs or sketches may serve as models to be reproduced.

The material is introduced by the instructor through lecture-demonstration and discussion. Wherever possible, actual garments or completed muslin samples should be used to illustrate teaching points. Currently fashionable examples of the styles under discussion may be found in fashion magazines and newspaper advertisements. These should be freely used to motivate students and illustrate lectures.

Nine modules of draping and patternmaking introduce the student to the basic principles of pattern development. During the laboratory periods, students develop a pattern for each of the problems explored in class. Before the end of this area of instruction, a sample garment must also be completed. This should be an original design for design students, but other students may copy a sketch or photograph. The sample garment provides an opportunity to view the function of pattern development in relation to design and construction. It permits the students to practice and expand the skills previously learned in *Garment Construction*, and provides practical application of their newly acquired skill in pattern development.

Teaching Modules

	Suggested Hours	
	Class	Laboratory
I. Introduction to Draping and Pattern Drafting	4	3
II. Draping Basic Patterns	5	12
III. The Principle of Slash and Spread	2	2
IV. Dart Manipulation	5	14
V. Skirts	6	14
VI. The Shift and Simple Collars	4	11
VII. Fitting With Seams	7	22
VIII. The Shirtwaist Dress and Shirt Details	6	13
IX. The Sample Garment	0	40
Total Hours — — —	39	131

I. INTRODUCTION TO DRAPING AND PATTERN DRAFTING

Teaching Content

A. Draping

1. Tools
 - a. Scissors
 - b. Pins
 - c. Tape measure
 - d. L-Square
 - e. Hip curve
 - f. French curve
 - g. 2" x 18" transparent ruler

- h. Tracing wheel
- i. Pencils

2. Model form

- a. Types of forms
 - 1) Dress
 - 2) Slacks
 - 3) Full length
 - 4) Brassiere

b. Sizes

c. Year-variations

3. Muslin

- a. Quality
 - 1) Fine
 - 2) Coarse
 - 3) Heavy weight: toile

4. Grain

- a. Length-wise
- b. Cross-wise
- c. Bias

5. Preparation of muslin for draping

- a. Blocking
- b. Pressing
- c. Drawing grain lines (with a sharp pencil)

B. Pattern Drafting

1. Comparison of patterns

- a. Commercial
- b. Industrial
- c. Sample room

2. Tools — (same as for draping)

3. Paper

- a. Lightweight
- b. Oak tag

4. Pattern notations

- a. Stitching lines
- b. Crossmarks: notches
- c. Punch holes
- d. Grain lines
- e. Pattern piece identification
 - 1) Style number
 - 2) Size
 - 3) Center front
 - 4) Center back

5. Cutting a paper pattern

- a. Straight lines
- b. Curves

Learning Experiences

1. Draping — Have students tear a piece of muslin in preparation for draping the Basic Waist. Block, press and draw the center front grain line.
2. Pattern drafting — Provide students with a sleeve sloper which they will copy. Size should be the same as the dress form used in draping.

II. DRAPING BASIC PATTERNS

Teaching Content

- A. Basic Waist
 - 1. Front: shoulder and waistline darts
 - 2. Back: shoulder and waistline darts
- B. Basic Skirt
- C. Transferring Paper Patterns to Muslin
- D. Setting in Sleeve

Learning Experiences

Have students drape the basic waist and skirt. Transfer the sleeve sloper, which was copied in pattern drafting in Module I, to muslin and set in sleeve.

III. THE PRINCIPLE OF SLASH AND SPREAD

Teaching Content

- A. Bell Sleeve
 - 1. Slash and spread
 - 2. Facing for lower edge
- B. Puff Sleeve
 - 1. Slash and spread
 - 2. Cuff

Learning Experiences

- Have students:
- 1. Draft a bell sleeve and cut facing for the lower edge.
 - 2. Draft a puff sleeve and cut a cuff to finish the lower edge.

IV. DART MANIPULATION

Teaching Content

- A. Draping
 - 1. One dart waist front
 - a. Waistline dart
 - b. Center front waistline dart
 - c. French dart
 - d. Flange
 - e. Neckline dart
 - f. Center front bustline dart
 - 2. Balanced grain waist front
 - a. Underarm and waistline darts
 - b. Various other dart positions with straight grain at bust level
 - 3. Back: neckline and waistline darts
 - 4. Utilization of tucks and gathers in lieu of darts
- B. Pattern Drafting
 - 1. Transfer of muslin patterns to oak tag
 - 2. The pivoting principle

- a. One dart waist from a two dart sloper
- b. Division of basic darts into two or more darts
- c. Tucks or shirring

Learning Experiences

- 1. Draping — Have students:
 - a. Drape a waist with the underarm and waistline dart front, and the neckline and waistline dart back. They will then use the Bell Sleeve pattern drafted in Module II to cut into muslin and set into this waist.
 - b. Drape a waist manipulating the darts into any desired position; puff sleeve or shortened sleeve sloper may be used if desired.
- 2. Pattern Drafting — Have students:
 - a. Transfer their muslin basic waist pattern to oak tag; transfer the two dart sloper to the one dart sloper using the pivoting principle; pivot the one dart sloper into various positions; draft a finished pattern for a one dart waist.
 - b. Draft a waist with divided darts.
 - c. Draft a finished pattern using shirring instead of darts and test in muslin.

V. SKIRTS

Teaching Content

- A. Draping
 - 1. Straight grain
 - a. Dirndl
 - b. Dome
 - 2. Flared
 - a. 4-Gore
 - b. A-Line
 - 3. Hip yoke
 - 4. Shaped midriff
- B. Pattern Drafting
 - 1. Dirndl
 - 2. Flared - hip yoke
 - 3. Circular

Learning Experiences

- 1. Draping — Have students drape a:
 - a. Dirndl skirt
 - b. Dome skirt
 - c. Flared skirt

Note: Any of the above skirts may be designed with a hip yoke or a shaped midriff
- 2. Draping — Have students select two of the skirts draped and combine with the dart manipulation waists draped in a previous module.
- 3. Pattern Drafting — Have students:

- a. Transfer muslin basic skirt pattern to oak tag, using the skirt sloper to develop a pattern for a dirndl skirt with a hip yoke.
- b. Develop a pattern for a circular skirt.

VI. THE SHIFT AND SIMPLE COLLARS

Teaching Content

- A. Draping Shifts
 1. Straight
 2. Shaped
 3. Yokes
 4. Draping in fabric
- B. Drafting Collars
 1. Straight collars
 - a. Convertible
 - b. Bias rolled
 - c. Mandarin
 2. Round collars
 - a. Peter Pan
 - b. Bertha
 - c. Cape
 - d. Sailor

Learning Experience

1. Pattern Drafting — Have students draft patterns for one straight collar and one round collar.
2. Draping — Have students:
 - a. Drape a straight shift in muslin
 - b. Drape a shaped shift in fabric

Note: One of the shifts should be styled with a yoke front, and both shifts should be designed with the collars developed in Pattern Drafting.

VII. FITTING WITH SEAMS

Teaching Content

- A. Draping
 1. Princess waist
 2. Six-gore skirt
 3. Princess dress
- B. Pattern Drafting
 1. Princess waist
 2. Yokes and other fitting lines
 3. Gored skirt

Learning Experiences

1. Draping — Have students drape:
 - a. Dress with a princess waist and a 6-gore skirt
 - b. Princess dress
2. Pattern Drafting — Have students draft a pattern for:
 - a. Princess waist
 - b. Gored skirt

VIII. SHIRTTWAIST DRESS AND SHIRT DETAILS

Teaching Content

- A. Draping the Shirtwaist Dress
 1. Back and shoulder yoke
 2. Pleats
 - a. Side
 - b. Box
 - c. Inverted
 - d. Cluster
 - e. Accordion
 - f. Sunburst
 - g. Crystal
- B. Drafting Shirtwaist Details
 1. Tabs
 2. Shirtwaist sleeve
 3. Cuffs
 - a. Straight (barrel)
 - b. French
 4. Two-piece shirt collar

Learning Experiences

1. Draping — Have students drape a shirtwaist dress that has a yoke, a collar, shirtwaist sleeves, a tab closing, and pleats.
2. Pattern Drafting — Have students draft patterns for the tab, sleeve and collar for the shirtwaist dress that is being draped.

IX. THE SAMPLE GARMENT

The sample garment may be an original design or a copy, depending on the ultimate career objectives of the student. It should be a dress with a set-in sleeve. Design details should be drawn from those covered throughout the area of instruction. The pattern for the sample garment may be draped or drafted, whichever is most expedient. In constructing the sample garment, the student draws on the skills previously developed in garment construction. The garment is to be draped and fitted on a model form. The instructor discusses and demonstrates the use of backing, lining and interlining.

Emphasis throughout assembly of the garment should be placed on the principle of unit construction so that all waste motion and unnecessary handling is eliminated.

Suggested Evaluation

The numerous projects developed throughout this area of instruction should be evaluated by the instructor.

tor on the basis of accuracy and originality for design students. For students whose goals are in the field of apparel production, accuracy of interpretation rather than originality should be the basis for evaluation. The Sample Garment should be evaluated on skillful construction as well as the aforementioned criteria.

In addition a practical final examination may be given at the completion of this area of instruction. This examination may be based on a fashion sketch, representative of the work covered, which is interpreted in muslin by the student within a prescribed time.

Teaching Resources

TEXTS AND REFERENCES

Bishop, E. *The Bishop Method of Clothing Construction Coats and Clark's Sewing Book*

Fashion Institute of Technology, *Apparel Design - First Semester Notes* (Available for purchase from College Shop, F.I.T., 227 West 27th St., New York, N.Y. 10001)

Kopp, E., Rolfo, V., and B. Zelin, *Designing Apparel Through the Flat Pattern*

INSTRUCTIONAL SUPPLIES

- Muslin for each project
- Photographs or sketches depicting variations of each project
- Actual garments showing methods of construction
- Student fabric for sample garments

ADVANCED PATTERN DEVELOPMENT

Prerequisites: *Garment Construction; Introduction to Pattern Development*

Suggested Hours: 170

Behavioral Objectives

This area of instruction should enable students to:

1. Develop advanced skill in draping and drafting garment patterns for design and production purposes.
2. Solve patternmaking problems of greater complexity than explored in the introduction to pattern development.

Instructional Guidelines

Building on the basic skills developed in Introduction to Pattern Development, this area of instruction is designed to explore and solve the more complex problems of draping and pattern drafting. The content includes: drafting basic patterns from measurements, an introduction to tailored garments, and handling fabrics for soft draping and more intricate effects. A sample garment serves to provide the student with the opportunity for practical application of the more challenging material covered.

Draping and pattern drafting are again presented simultaneously, thus continuing the method of presentation already established in the Introduction to Pattern Development. It is again recommended that the evaluation of student progress be adapted to the career aims of the individual students in the class.

Teaching Modules

	<i>Suggested Hours</i>	
	<i>Class</i>	<i>Laboratory</i>
I. Drafting Basic Patterns	4	6
II. Cowls	3	15
III. Unmounted Sleeves	8	23
IV. The Peg Skirt	2	4
V. Slacks	3	5
VI. The Torso Sloper and Suit and Coat Conversion	4	6
VII. The Tailored Garment	4	17

VIII. Soft Draping	3	15
IX. Striped Problems	1	7
X. The Sample Garment		40
Total Hours — — —	32	138

I. DRAFTING BASIC PATTERNS

Teaching Content

- A. Sleeve sloper
- B. Waist sloper
 - 1. Front
 - 2. Back
- C. Skirt sloper

Learning Experiences

Have students draft a set of basic patterns to fit the model form used for draping, test patterns in muslin, make necessary adjustments and cut in oak tag.

II. DRAPING COWLS

Teaching Content

- A. Simple Bias Cowls
 - 1. High
 - 2. Low
 - 3. Front
 - 4. Back
 - 5. Halter
- B. Built-up Cowl
- C. Square Cowl
- D. Armhole Cowl
- E. Fabric Considerations

Learning Experiences

1. Demonstrate draping cowls.
2. Have students select two cowls from those discussed and demonstrated, and design two complete garments incorporating cowls selected. Students will drape one garment in muslin and the other in fabric.

III. UNMOUNTED SLEEVES

Teaching Content

- A. Draping Unmounted Sleeves

1. Dolman sleeve
 - a. Basic fitted dolman
 - b. Stylized dolman
2. Kimono and princess combination sleeve

B. Drafting the Kimono Sleeve

1. Basic kimono sleeve sloper
2. Kimono sleeve with stylized armhole
3. Kimono sleeve with gusset

C. Drafting Combination Sleeves

1. Raglan sleeve
2. Variations of raglan sleeve
3. Kimono variations developed from raglan sloper
 - a. Yoke and sleeve cut in one
 - b. Dropped shoulder sleeve

Learning Experiences

1. Draping — Have students:
 - a. Drape a two-dart waist with a long fitted dolman sleeve
 - b. Design and drape a dress with a stylized dolman sleeve
 - c. Design and drape a dress with the kimono and princess combination sleeve (note: the peg skirts of the following module may be incorporated in this assignment)
2. Pattern Drafting — Have students:
 - a. Draft the basic kimono sleeve sloper
 - b. Develop patterns for two stylized armhole waists from the basic kimono sleeve sloper
 - c. Draft a pattern for a waist with a kimono sleeve with gusset and test in muslin
 - d. Design and draft pattern for a raglan sleeve which they test in muslin
 - e. Design and draft pattern for a kimono variation developed from a raglan sloper and test in muslin

IV. PEG SKIRT

Teaching Content

- A. Peg Skirt With Side Seam
- B. One Piece Peg Skirt

Learning Experiences

Have students design and drape both peg skirts. These may be combined with any of the sleeves developed in Module III in draping or pattern drafting.

V. SLACKS

Teaching Content

- A. Draping Slacks
 1. Basic crotch
 2. Draping various silhouettes

- a. Straight
- b. Tapered
- c. Flared
- d. Bell bottoms
- e. Culottes

B. Drafting Slacks

1. Basic slacks pattern
2. Variations in length
 - a. Shorts
 - b. Slacks
3. Jeans

Learning Experiences

1. Draping — Have students design and drape slacks in fabric.
2. Pattern Drafting — Have students draft:
 - a. Basic slacks sloper
 - b. Pattern for jeans which they will test in muslin or fabric

VI. TORSO SLOPERS AND SUIT AND COAT CONVERSION

Teaching Content

- A. Draping Torso Slopers
 1. Front waist with shoulder and waistline darts
 2. Back waist with shoulder and waistline darts
 3. Set-in sleeve
- B. Drafting Suit and Coat Conversion
 1. Transferring torso slopers to oak tag
 2. Converting torso sloper
 - a. Suit sloper
 - b. Coat sloper
 3. Converting sleeve sloper
 - a. One-piece suit sleeve
 - b. One-piece coat sleeve
 - c. Two-piece coat sleeve

Learning Experiences

1. Draping — Have students drape a torso sloper in muslin and set-in sleeve.
2. Pattern Drafting — Have students draft:
 - a. Suit sloper with a one-piece sleeve
 - b. Coat sloper with a two-piece sleeve

VII. THE TAILORED GARMENT

Teaching Content

- A. Drafting Tailored Collars
 1. Shawls
 - a. Basic
 - b. Variations
 2. Notched
 - a. Basic
 - b. Variations

B. Combining Draping and the Use of the Sloper

C. Cutting Linings

Learning Experiences

1. Pattern Drafting — Have students draft:
 - a. Basic shawl collar and develop a pattern for two shawl collar variations involving amount of roll, shape of neckline and size of collar.
 - b. Basic notch collar and develop a pattern for two notched collar variations.
2. Have students test collar patterns in muslin.
3. Combining draping and pattern drafting in the most expedient way, have students design and develop a coat or suit in muslin.

VIII. SOFT DRAPING

Teaching Content

- A. Bias Twist
- B. Boned Foundation
- C. Draping in Chiffon

Learning Experiences

Have students design and drape in fabric an evening gown incorporating soft draping over a boned foundation.

IX. STRIPED PROBLEMS

Teaching Content

- A. Matching stripes and plaids
 1. Balanced seams
 2. Mitered corners
 3. Joining bias
- B. Using Fabric Without Waste
- C. Special Effects With Stripes and Plaids

Learning Experiences

Have students design a garment using striped or plaid fabric; draft pattern and test in fabric.

X. SAMPLE GARMENT

The sample garment may be an original design or a copy, depending on the career goal of the student. The garment constructed in this area of instruction must be fitted on a live model. In order to fit professionally, students must not sew garments to fit themselves but should, instead, work with another student. Designers in industry use tall, slender models, and every effort should be made to have design students work with more or less ideally proportioned models in the classroom situation.

Sample garments do not have to be limited in the area of design, since students should be able to develop a pattern for almost any type of garment by the time they have completed this area of instruction. The instructor would be wise, however, to carefully assess the student's sewing ability and experience before the student is encouraged to attempt the construction of tailored garments. Some students handle tailored garments successfully, patiently following instructions and turning out a professional product. Others, often students with significant design ability, do not have the feeling for the precision required to do a good tailoring job and, rather than be permitted to turn out a below-standard product, they should be encouraged to construct a garment within their technical abilities.

When sample garments are completed, it is suggested that an extra-curricular fashion show activity could be planned and staged by the students. In addition to family, friends and school-mates, prospective employers should be invited to attend the students' showing.

Suggested Evaluation

As in the Introductory Pattern Development area of instruction, the numerous projects developed by students should be evaluated on the basis of accuracy and originality for design students and on the basis of accuracy and skillful construction for students whose career goals are production. However, the sample garment should also be evaluated on evidence of the student's ability to create a garment which incorporates the more advanced problems covered in this area of instruction such as soft bias draping, and more complex details or effects. A practical exam may also be given to evaluate the student's competency in creating a pattern from a more complex fashion sketch. This pattern should be interpreted in muslin within a time limit prescribed by the instructor.

Teaching Resources

TEXTS AND REFERENCES

- Kopp, E., Rolfo, V., and B. Zelin, *Designing Apparel Through the Flat Pattern*
— — — *How to Draft Basic Patterns*

Instructional Supplies

- Muslins for each project
- Photographs or sketches depicting variations of each project
- Actual garments which illustrate methods of construction
- Fabric for sample garments (to be supplied by students)

GRADING

Prerequisites: *Introduction to Pattern Development*

Suggested Hours: 90

Behavioral Objectives

This area of instruction should enable students to:

1. Analyze how the human body grows in order to understand sizing and the mechanics of grading.
2. Grade the various parts of a garment by simple reliable methods while maintaining the proper proportions of fit and style.
3. Develop the ability to grade up and down a range of sizes with accuracy and skill in order to adapt to wholesale garment production methods.
4. Grade a basic sheath dress, a shoulder yoke blouse, trousers, gored sections, a jacket with shawl collar, a kimono sleeved dress, a stylized armhole dress, a raglan sleeve dress, a set-in sleeve dress, a princess sleeve dress, a dropped shoulder dress and a kimono sleeve with gusset.

Instructional Guidelines

This is a comprehensive grading course. It is designed to provide a firm foundation upon which the student can build the competence needed for employment. The selection of the learning modules and the depth of treatment to be given each is presented as functionally as possible in complete garment units. This will facilitate application of fundamental principles to varying problem situations that would be found under normal working conditions. Within each module there is provision for emphasis of significant factors which tend to be found in a wide range of situations.

An analysis of each section of the garment is given before application in the form of a split diagram. The diagrams show the natural growth of the body, in two directions, by opened areas closely related to the movements of actual grading. Proper use of these diagrams give a scientific approach to grading and

make the material much more interesting and easier to understand.

A laboratory experience should follow a lecture-demonstration by the instructor for each section of the garment. Theory and practice are so closely related that they should be treated as parts of the same thing. Therefore, if the students are to get the maximum benefit from this area of instruction, lecture and laboratory work should be closely coordinated. This can best be done by providing long, cork top tables 36 inches high with each student assigned an area in which to work. To prepare the student for the laboratory period, the demonstration is geared around the exercise they will apply. These applications are a definite part of their education as well as their homework, and they are responsible for the results.

There are several small hand grading machines which are used in industry by graders to expand their ability to achieve finer quality and greater accuracy. Giving students an opportunity to work with these machines will enhance learning and expose students to industry practices. Although the cost of these machines (approximately \$225) may not permit one for every student, learning experiences on one or more machines of this type could be assigned to groups of students on a rotating basis.

Another type of grading machine is the multi-grader which allows the grader to mechanically produce up to seven pattern sizes simultaneously. An IBM computer also exists to translate an original dress into other sizes automatically.

Field trips to see these machines should be planned. These trips stimulate the students' interest by showing them the practical applications of fundamental principles as well as giving them a preview of the grading profession as it is practiced.

Teaching Modules

	Suggested Hours	
	Class	Laboratory
I. The Importance of Fit	3	1

II. Understanding The Meaning of Grade	3	1
III. Preparing To Grade	2	1
IV. Grading The Basic Sheath Dress	5	5
V. Grading a Shoulder Yoke Blouse	3	3
VI. Grading Slacks and Shorts	3	3
VII. Grading Gored Sections	4	4
VIII. Grading a Jacket With Shawl Collar	3	3
IX. Grading a Kimono Sleeve Dress	3	3
X. Grading a Stylized Square Armhole Dress	3	3
XI. Grading a Kimono Raglan Sleeve Dress	3	3
XII. Grading a Set-In Sleeve Dress	3	3
XIII. Grading a Princess Sleeve Dress	3	3
XIV. Grading a Drop Shoulder Dress	3	3
XV. Grading a Kimono Sleeve With Gusset	3	4
Total Hours — — —	47	43

I. THE IMPORTANCE OF FIT

Teaching Content

- A. Body Measurements
 - 1. National Bureau of Standards
 - 2. Standardization of measurements
 - 3. Model form makers
 - 4. Manufacturers
- B. Study of Body Types
 - 1. Size-type designations
 - 2. Height differences
 - 3. Variations
 - 4. Pattern differences
- C. Established Methods for Grading
 - 1. Manual
 - 2. Machine
 - 3. Computer

Learning Experiences

Plan a field trip to a place where grading operations are performed. If facilities are not available, the next best thing is to demonstrate the operation of a grading machine in the classroom with group student participation thereafter.

II. UNDERSTANDING THE MEANING OF GRADE

Teaching Content

- A. Various Areas of Body Growth
 - 1. Circumference increases
 - 2. Length increases
 - 3. Width increases
 - 4. Across increases
- B. Calculating Grade Increases
 - 1. Circumference grade (1", 1-1/2", 2")
 - 2. Length grade
 - 3. Width grade
 - 4. Lines parallel to floor
- C. Grades Employed Within The Size Designations
 - 1. Juniors
 - 2. Misses
 - 3. Women's
 - 4. Half-Sizes

Learning Experiences

Have students complete problem situations on calculating grade increases in the various areas of body growth.

III. PREPARING TO GRADE

Teaching Content

- A. Reading the Grading Charts
 - 1. Full measurement charts
 - 2. Detailed size charts
 - 3. Areas that grade the same
 - 4. Areas changing according to grade
- B. Basic Movements of Patterns
 - 1. Horizontal
 - 2. Vertical
 - 3. Blending
 - 4. Angle
- C. Pattern Inspection
 - 1. Assembling
 - 2. Checking accuracy
 - 3. Grain lines
 - 4. Guidelines
 - 5. Control lines

Learning Experiences

1. Have students make a chart listing the circumference, length, and width grades and all the size designations within the Misses size range. Grades are then figured for each area of body growth.
2. Give each student a pattern of a basic sheath dress (Module IV). The pattern pieces are assembled and checked for accuracy. Grain lines, guidelines, and

control lines are then squared on the pattern sections.

IV. GRADING THE BASIC SHEATH DRESS

Teaching Content

- A. Analysis for Grading the One Dart Front Bodice
 - 1. One dart front bodice
 - 2. Waist dart
- B. Analysis for Grading Shoulder and Neck Dart Back Bodice
 - 1. Back bodice with shoulder dart
 - 2. Back bodice with neck dart
- C. The Bodice – Grading Up and Down
 - 1. Uneven grade
 - 2. Pick-off
- D. Analysis of Basic Front Skirt Grade
 - 1. Basic front and back skirt
 - 2. Two darts
- E. Analysis for Long Basic Sleeve Grade



Learning Experiences

- 1. Demonstrate teaching content.
- 2. Have students grade patterns of the Basic Sheath Dress that are supplied by the teacher.
- 3. Have students either by hand or hand machine, grade up and down a range of sizes and "pick-off" the patterns.
- 4. Have students practice uneven grade.

V. GRADING A SHOULDER YOKE BLOUSE

Teaching Content

- A. Analysis for Grading Shoulder Yoke Blouse
 - 1. Shoulder yoke
 - 2. Front bodice
 - 3. Back bodice
- B. Analysis for Grading Peter Pan Collar

C. Analysis for Grading Shirtwaist Sleeve

- 1. Shirtwaist sleeve
- 2. Cuffs



Learning Experiences

Have students grade patterns of Shoulder Yoke Blouse that are supplied by the teacher.

VI. GRADING SLACKS AND SHORTS

Teaching Content

- A. Analysis of a Slack Grade
 - 1. Front of basic slacks
 - 2. Back of basic slacks
 - 3. Belt
- B. Analysis for Grading Basic Shorts
 - 1. Front of basic shorts
 - 2. Back of basic shorts



Learning Experiences

Have students grade patterns of different types of slacks and shorts that are supplied by the teacher, after teacher demonstrates procedures.

VII. GRADING GORED SECTIONS

Teaching Content

- A. Analysis for Grading Shoulder Princess Line Bodice
 - 1. Shoulder princess line center front panel

2. Front side panel
 3. Back shoulder princess bodice
 4. Back side panel
- B. Analysis of Rolled Collar Grade
- C. Analysis of A Short Sleeve Grade
- D. Analysis for Grading Six Gored Skirt
1. Center panel – back and front
 2. Side panel – back and front



Learning Experiences

1. Have students grade patterns of gored sections and short sleeve that are supplied and demonstrated by the teacher.
2. Have students grade up and down a range of sizes.

VIII. GRADING A JACKET WITH SHAWL COLLAR

Teaching Content

- A. Analysis for Grading Hip Length Jacket With Shawl Collar
1. Front jacket with shawl collar
 2. Back jacket
 3. Flaps and buttonholes
 4. Facings
- B. Analysis of A Two Piece Sleeve Grade



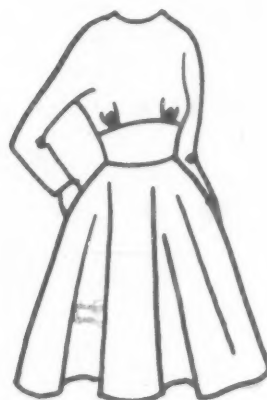
Learning Experiences

After demonstration of teaching content, have students break into groups and use hand machine to grade patterns of a jacket with shawl collar that are supplied by the teacher.

IX. GRADING A KIMONO SLEEVE DRESS

Teaching Content

- A. Analysis for Grading Kimono Sleeve Bodice with Midriff
1. Bodice: back and front
 2. Midriff: back and front
- B. Analysis of a Circle Skirt Grade
1. Front circle skirt
 2. Back skirt



Learning Experiences

1. After demonstration, have students grade patterns of a Kimono Sleeve dress.
2. Have students review and practice uneven grade.

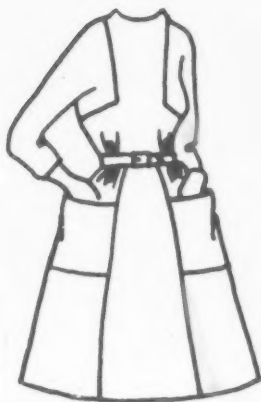
X. GRADING A STYLIZED SQUARE ARMHOLE DRESS

Teaching Content

- A. Analysis for Grading Stylized Square Armhole Bodice
1. Bodice: back and front
 2. Sleeve
- B. Analysis for Grading Six Gore Gathered Skirt
1. Center panel: front and back
 2. Side panel with gathers: front and back
 3. Pockets

Learning Experiences

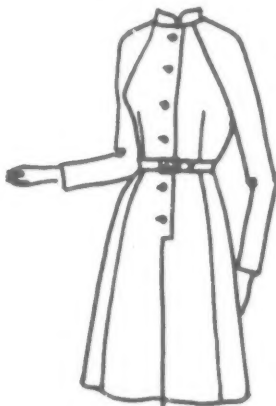
Students grade patterns of stylized square armhole dress that are supplied by the teacher after a demonstration.



XI. GRADING A KIMONO RAGLAN SLEEVE DRESS

Teaching Content

- A. Analysis for Grading Kimono Raglan Sleeve Bodice
 - 1. Front kimono raglan bodice
 - 2. Back kimono raglan bodice
 - 3. Kimono raglan sleeve
 - 4. Mandarin collar
- B. Analysis of Eight Gore Skirt Grade
 - 1. Center panel: front and back
 - 2. Side panel: front and back



Learning Experiences

Have students grade patterns of kimono raglan sleeve dress that are supplied by the teacher after a demonstration.

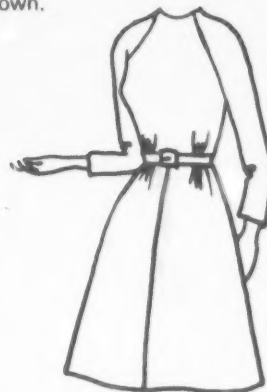
XII. GRADING A SET-IN RAGLAN SLEEVE DRESS

Teaching Content

- A. Analysis for Grading Set-In Sleeve Bodice
 - 1. Set-in raglan sleeve bodice
 - 2. Raglan sleeve (over arm seam)
- B. Analysis of a Four Gore Front Skirt Grade

Learning Experiences

- 1. Have students grade patterns of a set-in raglan sleeve dress that are supplied by the teacher after demonstrations.
- 2. Have students practice grading a range of sizes up and down.



XIII. GRADING A PRINCESS KIMONO DRESS

Teaching Content

- A. Analysis for Grading a Princess Kimono Bodice
 - 1. Princess center panel: front and back
 - 2. Side panels: front and back
- B. Analysis for Grading a Six Gore Skirt with Pleats
 - 1. Center panels: front and back
 - 2. Side panels: front and back
- C. Analysis of a Flat Sailor Collar Grade



Learning Experiences

Have students grade patterns of princess sleeve dress that are supplied by the teacher after a demonstration.

XIV. GRADING A DROP SHOULDER DRESS (Front Only)

Teaching Content

- A. Analysis of a Drop Shoulder Bodice Grade

1. Drop shoulder bodice
2. Puff sleeve

B. Analysis of a Dirndl Skirt Grade



Learning Experiences

Have students grade patterns of drop shoulder dress that are supplied by the teacher after a demonstration of content and procedures.

XV. GRADING A KIMONO SLEEVE WITH GUSSET



Teaching Content

- A. Analysis for Grading Kimono Bodice with a Gusset
 1. Front kimono bodice
 2. Back kimono bodice
 3. Gussets
- B. Analysis of a Convertible Collar Grade
 1. Convertible collar
 2. Tabs
- C. Analysis of a Peg Skirt Grade
 1. Peg front skirt

2. Straight back skirt with kick pleat

Learning Experiences

1. After demonstrating procedures, have students grade patterns of a Kimono sleeve with gusset that are supplied by teacher. If hand grading machine is available for student use, students may work in groups; if not, students may grade individually by hand.
2. Have students practice an even grade.

Suggested Evaluation

1. Laboratory work is evaluated for neatness, correct application of principles and procedures, and accuracy of results. Evidence of the student's ability to exercise initiative and judgment in solving problems should also be given consideration since the end result of this area of instruction is more than the absorption of factual information.
2. A final performance rating may also be scheduled to evaluate for mastery of basic principles and their application. The examination should not duplicate problems previously solved by the student, but should be so designed as to provide further application of basic principles. Mathematical accuracy and neatness should also be evaluated.

Teaching Resources

TEXTS AND REFERENCES

- Commercial Standard on Body Measurements for the Sizing of Women's Patterns and Apparel, TS-5200A.*
Commodity Standards Division, U.S. Department of Commerce, Washington 25, D.C.
- Kopp, E., Rolfo, V. and B. Zelin. *Designing Apparel Through the Flat Pattern*
- , *How to Draft Basic Patterns*
- Price, J. and B. Zamkoff. *Grading Techniques for Modern Design*

INSTRUCTIONAL SUPPLIES

- Pattern paper
- Master patterns for grading up and down — size 10 suggested
- Large split diagram charts of each section of a garment
- Measurement charts for referral purposes
- Student supplies 12" transparent ruler, metal L-square, colored pencils
- Hand grading machine(s) — optional
 1. Approximate cost — \$225
 2. Supply sources
 - a. Dario-Grad-O-Meter
11100 Cumpston St.
Hollywood, Calif. 40405
 - b. Accurate Speed Grader
Sunny-Young, Inc.
450 Seventh Ave.
New York, N.Y. 10001

ADVANCED FASHION DRAWING

Prerequisites: *Introduction to Fashion Drawing*

Suggested Hours: 60

Behavioral Objectives

This area of instruction should enable students to:

1. Increase skill in rendering the fashion figure.
2. Use various media for this purpose.
3. Illustrate various fabrics.
4. Draw children for children's wear design.
5. Draw the male fashion figure for men's wear design.
6. Explore the design possibilities in fabrics of various weights and textures.
7. Develop the designer's portfolio.

Instructional Guidelines

This is an advanced drawing area of instruction designed to develop additional skills in rendering fabrics and figures. Students engage in intensive practice drawing fashion figures in various poses. In addition to water colors, already utilized in *Introduction to Fashion Drawing*, other techniques commonly used by fashion designers and illustrators are introduced. Students apply these varied techniques in executing the laboratory assignments throughout the course. Special emphasis is placed on the clearly defined representation of various types of fabrics and materials used in fashion. Students are taught to draw boys and girls of all ages for children's wear design, and are introduced to the male fashion figure for the purpose of designing men's apparel.

The teaching method of lecture-demonstration and simultaneous application of newly learned techniques by the student, suggested for *Introduction to Fashion Drawing*, should also be used in this area of instruction.

The plates developed in this area of instruction will comprise the student's portfolio to be used for future employment interviews.

Teaching Modules

	Suggested Hours	
	Class	Laboratory
I. Introduction to Rendering in Different Media	2	2
II. Fabrics and Other Materials	10	22
III. Children's Fashion Figures	5	10
IV. The Male Fashion Figure	3	6
Total Hours — — —	20	40

I. INTRODUCTION TO RENDERING IN DIFFERENT MEDIA

Teaching Content

- A. Colored Crayon Pencil
 1. How to use
 2. Effects possible
- B. Felt Tipped Pens (Magic Marker)
 1. How to use
 2. Effects possible
- C. Opaque Designer Colors
 1. How to use
 2. Effects possible
- D. Pen and Ink
 1. How to use
 2. Effects possible
- E. Types of Papers
 1. Bristol board
 2. Ledger drawing paper
 3. Layout paper (The advertiser)
 4. Vellum
 5. Morilla water color paper
 6. Coquille paper
 7. Double deckle paper (colors)

Learning Experiences

Students practice using each medium in order to achieve effects discussed in module and demonstrated by the teacher.

II. FABRICS AND OTHER MATERIALS

Teaching Content

- A. Tweeds and Textures

1. Ledger drawing paper
 - a. Rought hard surface
 - b. Colored crayon pencil
 2. Crayon pencil on morilla
 3. Dry brush
- B. Stripes and Plaids**
1. Approximate repeats related to garment size
 - a. Fine
 - b. Medium
 - c. Bold
 2. Direction of pattern:
 - a. Simplification following single, largest direction
 - 1) Shadows for creases
 - 2) Indications of grain changes
 - b. Indications of grain changes
 3. Texture
 - a. Dry brush for tweeds
 - b. Wet for smooth fabrics
 4. Painting plaids
 - a. From light to dark in water color or magic marker
 - b. From dark to light in opaque medium
 - c. Largest amount of color applied first
- C. Prints**
1. Approximate repeats related to garment size
 2. Approximate shapes
 - a. Florals
 - b. Geometrics
 - c. Paisley
 - d. Abstract
 - e. Objects
 - f. Dots
 3. Completion of one color application before another
 4. Dots
 - a. Applied on a diamond grid
 - b. Tip of brush must make a round circle
- D. Sheers**
1. Transparent: shown under clothing or body under garment
 2. Soft: concave, fluid lines lift up at hem
 - a. Chiffon
 - b. Lawn
 - c. Voile
 3. Stiff: crisp angular lines
 - a. Organdy
 - b. Organza
 - c. Net
- E. Shiny Surfaces**
1. Types of shiny surfaces
 - a. Satin
 - b. Taffeta

- c. Plastic
- d. Smooth leathers
2. Highlight technique
 - a. Large and sharply contrasted
 - b. Centered and darkened at edges
 - c. Opaque white

F. Pile Fabrics and Furs

1. Types of fabrics
 - a. Velvet
 - b. Cut velvet
 - c. Corduroy
 - d. Velour
 - e. Fake fur
 - f. Fur
2. Techniques
 - a. Light outside and darkened center
 - b. Application on wet background
 - 1) From center out
 - 2) Allowed to bleed
 - c. Direction of long-haired furs indicated

Learning Experiences

Designing for a particular industry segment and identifying the segment and approximate retail price, have students design groups of:

- Five garments in a particular tweed fabric.
- Three garments in a striped fabric.
- Three garments in a plaid fabric.
- Five garments using various color coordinated prints.
- Three garments using a soft sheer fabric.
- Three garments using a crisp sheer fabric.
- Three garments in shiny surfaced materials.
- Three garments in either velvet or corduroy.
- Three fur or fur trimmed coats.

Note: All sketches should be swatched. Students may select areas such as sportswear, loungewear, coats and suits, boutiques, etc.

III. CHILDREN'S FASHION FIGURES

Teaching Content

A. Proportions of the Growing Child

1. Layette
2. Infants
3. Toddlers
4. Pre-school child
5. Girls
6. Boys
7. Pre-Teen
8. Prep
9. Young junior

B. Designing for Children

1. Special considerations for each size range
2. Utilitarian aspects of children's clothing
3. Fabrics and trimmings

C. How to Draw Children

1. Heads and features
2. Body development
 - a. Baby fat
 - b. Characteristic poses

Learning Experiences

1. Have students practice drawing children of various ages.
2. Assign students to visit local stores and sketch two garments displayed in each of the children's size ranges discussed in class.
3. Have students design groups of three garments for four of the size ranges discussed in class. There should be one group of dresses, one group of sportswear, one group of sleep and lounge wear, and one group of outerwear (coats, snow suits, etc.).

IV. THE MALE FASHION FIGURE

Teaching Content

A. Proportions of the Male Fashion Croquis as Compared to the Female

1. Larger head
2. Thicker neck
3. Wider shoulder
4. Lower waist
5. Narrower hips
6. Muscular legs
7. Longer arms
8. Coarser features

B. Special Approaches to Designing Menswear

1. Current trends
2. Substantial fabrics
 - a. Tailoring
 - b. Utility
3. Subtle approach
 - a. Heavier usage
 - b. Longer usage

Learning Experiences

Have students:

1. Place tracing paper over the female croquis and develop a male croquis incorporating the modifications discussed in class.
2. Draw men using live models.
3. Shop local stores and sketch, from displayed menswear merchandise, a group of three sportswear outfits and two tailored garments.
4. Design a garment appropriate for men's sportswear or a tailored garment.

Suggested Evaluation

Evaluation of the plates as they are completed for each laboratory assignment. Both accuracy of representation and creative flair should be considered. There are always some students who excel in the realistic execution of beautiful drawings whereas others, who may not be so exceptionally gifted in this area, might still possess the originality and good taste essential for fashion design. The instructor must then assist in analyzing the particular talent of students and help them find the career area where they can be most productive.

Teaching Resources

TEXTS AND REFERENCES

- Bennett-England, R. *Dress Optional; The Revolution in Men's Wear*
Ireland, P. *Fashion Design Drawing*
Jaffe, H. *Children's Wear Design*
Rowe, P. *Shorthand Fashion Sketching*
Sloan, E. *Illustrating Fashion*

INSTRUCTIONAL SUPPLIES

- Fabric swatches and larger pieces of fabrics in various textures
- Sketches illustrating how other artists have solved problems
- Actual garments to be used as models
- Live model wherever possible

FASHION DESIGN—PAST AND PRESENT

Prerequisites: *Basic Textiles; Advanced Fashion Design*

Suggested Hours: 60

Behavioral Objectives

This area of instruction will enable students to:

1. Relate the evolution of costume to the prevalent social and economic conditions of their times.
2. Trace the reappearance of various apparel design details from their origins to current use.
3. Develop the ability to design modern apparel with a basic grounding in the evolution of costume.

Instructional Guidelines

The material in this area of instruction is introduced by lectures, illustrated with slides depicting the clothing of the various historical periods. Sculpture, paintings, historic fashion plates and fashion photographs are utilized as visual source material. If at all possible, actual garments should be shown to students. This may be accomplished by working with local museum collections. Wherever applicable, current fashions with similar features should be shown along with the earlier versions. For example, the Greek chiton could be shown with a modern garment having a cowl draped neckline.

Laboratory exercises introduce the student to the technique of designing apparel by drawing inspiration from the fashions of the past. Emphasis should be placed on adapting relevant design features so that they function within the structure of modern utility and technology. All design sketches developed in the learning experiences should be accompanied by a swatch of suggested fabric and sources of historical inspiration should be noted and identified by the students.

Teaching Modules

	<i>Suggested Hours</i>	
	<i>Class</i>	<i>Laboratory</i>
I. Introduction to the History of Costume	2	0

II. The Ancient World	8	5
III. The Middle Ages	3	2
IV. The Renaissance	3	2
V. The Baroque Period	3	2
VI. Eighteenth Century France	3	2
VII. From Revolution to Empire in France	2	1
VIII. From Romanticism to World War I	5	2
IX. Major Regional Costume Influences	3	2
X. Modern Costume	8	2
Total Hours — — —	40	20

I. INTRODUCTION TO THE HISTORY OF COSTUME

Teaching Content

- A. Origins of Clothing and Costume
 1. Clothing: body covering
 2. Costume
 - a. Particular form of garment
 - b. Particular use
- B. Fashion As a Reflection of the Times
 1. Social
 2. Economic
 3. Religious
- C. Design Value of Costume History
 1. Basic understanding of the function of clothing
 2. Inspiration
 3. Fashion cycles
 4. Basic design features
 - a. Recognition
 - b. Identification
- D. Reasons For Wearing Clothing
 1. Protection against climate
 - a. Cold
 - b. Heat
 - c. Moderate climates
 2. Evidence of social levels
 - a. Status symbol
 - b. Financial status
 - c. Nobility and peasants
 - d. Uniforms

3. Modesty and morality
 - a. Interpretation of current values
 - b. Decency and indecency in exposure
4. Magical function
 - a. Primitive people
 - b. Ward off evil spirits
 - c. Impart strength: horse's tail
 - d. Symbols survive
5. Aesthetic and sexual attraction
 - a. Retain the illusion of youth
 - b. Exaggerate sexual differences
 - c. Confine women's movements

Learning Experiences

Assign students to visit a museum and observe historical costumes on exhibit and/or paintings in order to get an overview of changes in costume through the ages.

II. CLOTHING IN THE ANCIENT WORLD

Teaching Content

A. Earliest Known Garments

1. Fur skin of cavemen; hunters
2. Kaunake: shirt and shawl
 - a. Sheep or goat skin
 - b. Tufted cloth
3. Invention of weaving
 - a. Mesolithic period — 5000 BC
 - b. Wool and linen
 - c. Celts — Europe
 - d. Sumerians — Asia

B. Egypt 3200-1500 BC

1. Rigid and conservative civilization
2. Authoritarian government
3. Quasi-matriarchal society
4. Linen garments — cool, white
5. The sheath look in art
6. Draped styles
 - a. Pleats, sunburst
 - b. Transparent fabrics
7. Jewelry
 - a. Necklaces shaped like wide collar
 - b. Bracelets: upper and lower arm
8. Belt: high under bosom
9. Sandals
10. Wigs
11. Perfume

C. The Near East

1. 2000 BC sewn costume: leather or cloth
2. Covered bodies: religious taboos
3. Patriarchal society
4. Similarity of male and female clothing
5. Persian trousers — 400 BC

D. Ancient Crete 1750-1450 BC

1. Extraordinarily developed society
2. Comfortable houses: heat and running water
3. Freedom of women
4. Elegance in fashions
5. Women's clothing
 - a. Exposed bosom
 - b. Leather corset
 - c. Tiny waist
 - d. Bell shaped skirt
 - e. Shaped hats
 - f. Embroidery trimming
6. Cosmetics
7. Men's clothing
 - a. Shorts
 - b. Loin cloths

E. Classical Costume in Greece 600-400 BC

1. Body worship: athletics
2. Simplicity in clothing: democracy
3. Similarity of men's and women's clothing
4. Dorians: wool; Ionians: linen
5. Draped costume
 - a. Himation: wool cloak, also served as a blanket
 - b. Chiton: linen tunic
 - c. Peplos: open tunic, usually wool
6. Variations
 - a. Length
 - b. Belt
 - c. Clasps: fibulae
 - d. Drapes
7. Military costume
 - a. Helmets
 - b. Cuirass: leather and metal jerkin
 - c. Chlamys: decorated short cloak

F. The Hellenistic World and Rome

1. Influence of Far East: silk
2. Influence of India: cotton
3. Climate in Rome: colder than Greece
4. Similarity to Greek clothing
5. Men's costume
 - a. Underwear: linen loin cloth, tunica
 - b. Half length trousers
 - c. The toga
 - 1) Rectangle
 - 2) Semi-circle
 - 3) Wool
 - 4) Indication of rank
 - 5) Ceremonial togas
6. Women's costume
 - a. Lingerie
 - 1) Mamillare: brassiere
 - 2) Pagne: panty

- 3) Subucula: under tunic
- b. Stola or Talaris
 - 1) Sleeved gown
 - 2) Belted
- c. Palla: scarf
- 7. Elaborate jewelry: precious stones and pearls
 - a. Diadems
 - b. Rings
- 8. Hair styles
 - a. Elaborate
 - b. Dyed
- 9. Footwear
 - a. Sandals
 - b. Shoes and slippers
 - c. Military boots
- G. Byzantine Costume 300-500 AD
 - 1. Persian and Roman influence
 - 2. Stiff oriental silk
 - 3. Men's costume
 - a. Trousers
 - 1) Narrow
 - 2) Rich fabrics
 - b. One or two tunics
 - 1) Sewn
 - 2) Sleeves
 - c. Cloak
 - 1) Pinned at right shoulder
 - 2) Fibula
 - 4. Women's costume
 - a. Byzantine tunic
 - b. Palla: mantle
 - 5. Jewelry
 - a. Gold collar: pearls and gems
 - b. Diadems
- H. Costume in North and Central Europe
 - 1. Nomadic invasions: Etruscan and Persian influences
 - 2. Slightly shaped tunic: longer than Roman, sleeves, rolled neckline
 - 3. Cloak
 - 4. Breeches
 - 5. Bright colors
 - 6. Fabrics
 - a. Wool
 - b. Felt

Learning Experiences

Have students design:

- 1. Skirt and stole using the Kaunake for inspiration.
- 2. Peg-skirt evening dress using Egyptian costume for inspiration.
- 3. "At home" outfit using Persian costume for inspiration.

- 4. Dress using the Cretan flounced skirt for inspiration.
- 5. Cowl draped neckline dress using the Chiton for inspiration.
- 6. Bathing suit inspired by the mamillare and pagne.
- 7. Beaded dress inspired by Byzantine jewelry.
- 8. Turtle neck tunic and pants set from Early European costume.

All sketches in this and subsequent learning experiences should be swatched with suggested fabric, and sources of inspiration should be described and identified. Students should be directed to use reference books, or paintings and sculptures in local museums as source material.

III. THE MIDDLE AGES

Teaching Content

- A. Early Medieval Costume 700-1000 AD
 - 1. Religious influence
 - 2. Similarity of male and female clothing
 - 3. Technological decline
 - a. Weaving
 - b. Dyeing
 - c. Tailoring
 - 4. Men's clothing
 - a. Shirt or under tunic
 - 1) Chainse or camisia
 - 2) Linen
 - b. Upper tunic
 - 1) Bliaud or dalmatic
 - 2) Wool or silk
 - c. Cloak or mantle
 - 1) Long for kings
 - 2) Short for the common man
 - d. Trousers or Braies
 - e. Shoes
 - 5. Women's Clothing
 - a. Similarity to men's clothing
 - b. Leg coverings instead of trousers
 - 6. Hair styles
 - a. Simple
 - b. Dyed
 - 7. Military costume
 - a. Sleeved tunic or jerkin
 - b. Conical or bowl shaped helmet after 800 AD
- B. The Crusades 1095-1270 AD
 - 1. Contact with the Far East
 - 2. Protective clothing
 - 3. Luxury fabrics
 - 4. Similarity to early Medieval costumes
 - a. More luxurious
 - b. Long and full
 - 5. Corsetry introduced

6. Status symbols
 - a. Excessive use of fabrics
 - b. Wide, trailing sleeves
 - c. Trains
 - d. Long, pointed shoes
 - e. Longer clothes
 - f. Furs

C. Later Middle Ages 1270-1350 AD

1. Revival of European economy
2. Growth of towns
3. Rise of the wealthy middle class
4. Improved technology
5. European fabric centers
6. Improved garment construction
 - a. Cutting
 - b. Tailoring
7. Sumptuary laws
8. Men's clothing
 - a. Shirt: rarely seen
 - b. Under-tunic
 - c. Cyclas: sleeveless tunic
 - d. Hosen: well-fitted leg covering
 - e. Shoes: pointed
 - f. Hoods
9. Women's clothing
 - a. Chemise
 - b. Under-robe
 - c. Kirtle
 - d. Sideless gown
 - e. Mantle
 - f. Stockings
 - g. Shoes
 - h. Wimple: head dress
10. University costume: hood
11. Religious costume: cowl

Learning Experiences

Have students design, swatch and identify historical source for:

1. Dress with dolman sleeves using Early Medieval costume for inspiration.
2. Active sportswear outfit using medieval armor for inspiration.
3. Fitted and flared gown using a costume of the Later Middle Ages as inspiration.

IV. THE RENAISSANCE – NATIONAL DIFFERENCES IN COSTUME

Teaching Content

A. Italy 1350-1500 AD

1. Humanistic influences
2. Taste for beauty
3. Perfection of the human body

4. Elegance
 - a. Color harmony
 - b. Distinctive styling
5. Textile industry
6. Wealthy merchant class
7. Lace making
8. Pisanello: fashion sketches
9. Men's clothing
 - a. Tight, padded and boned bodices
 - b. Long, fitted hose
 - c. Short clothing
10. Women's clothing
 - a. Low cut gowns
 - b. Raised waistlines
 - c. Gathered skirts
 - d. Trains
 - e. Long lengths

B. France 1400-1500 AD

1. Fashion dolls
2. Court influence
3. Invention of engraving
4. Men's clothing
 - a. Short tunics
 - b. Tights
 - c. Houppelade
5. Women's clothing
 - a. Tight fitted, low necked gown
 - b. High waist lines and trains
 - c. Extreme head-dresses: Hennin
 - d. Pointed shoes

C. Spain 1500-1600 AD

1. Discovery of America
2. Reformation and Counter-Reformation
3. Leadership of Spain
4. Invention of machine knitting 1589
5. Men's clothing
 - a. Doublets
 - b. Ruffs
 - c. Close fitting tights with cod piece
 - d. Puffed upper stocks
 - e. Short cloak
 - f. Slashes as a style feature
 - g. Beret type hat
6. Women's clothing
 - a. Petticoats
 - b. Farthingale
 - c. Flattened breasts
 - d. Deep pointed waistline
 - e. Close fitting sleeves: armhole puffs
 - f. Padded epaulettes
 - g. White neckline ruff
 - h. White wrist cuffs
 - i. High collars

- j. Jeweled hair arrangements
- 7. Black: fashion color
- 8. Perfume rather than hygiene

Learning Experiences

Have students design, swatch and identify sources of information for:

1. Evening dress using Italian Renaissance costume as inspiration.
2. Three hats using Renaissance head dresses as inspiration.
3. Two children's garments (boy and girl) using the doublet and tights costume of Spanish men in the 16th century as inspiration.

V. THE BAROQUE PERIOD 1600-1700 AD

Teaching Content

A. Holland

1. Influences
 - a. England
 - b. Scandinavian countries
 - c. North Germany
 - d. America
2. Men's clothing
 - a. Longer breeches
 - b. Shorter doublets
 - c. Flaring boots
3. Women's clothing
 - a. Slimmer silhouette
 - b. Falling collar
 - c. High or normal waisted bodice

B. France — Louis XIV Court Life

1. Influence of nobility
2. Sumptuary laws
3. Rapid changes in fashion
4. Excessive trimmings
5. Men's clothing
 - a. Longer trunk hose
 - b. Petticoat breeches
 - c. Doublet
 - d. Cape
 - e. Knitted silk stockings
 - f. Flaring boots
 - g. Surcoat
 - h. Cravat
 - i. Wig
 - j. Large plumed hat
6. Women's clothing
 - a. Broad shouldered silhouette
 - b. Full sleeves
 - c. Skirts
 - 1) Layered
 - 2) Farthingale

- d. Broad lace collars
- e. Boned, pointed bodice
- f. Oval necklines
- g. Elbow length sleeves
- 7. First lace factories — 1666
- 8. Fashion trades: tailors' associations
- 9. Appearance of fashion publications

C. England

1. Puritans
 - a. Cromwell
 - b. Sober fashions
2. Textile production
3. Trade supremacy
4. Dominance of French fashions

Learning Experiences

Have students design, swatch and identify sources of information for:

1. Dress using the costume of the Puritans for inspiration.
2. Suit using the doublet and petticoat breeches for inspiration.

VI. EIGHTEENTH CENTURY FRANCE

Teaching Content

A. Regency Period

1. Reaction to social rigidity and pomp of Louis XIV
2. Rise of wealthy aristocracy
3. Graceful elegance
4. Men's clothing
 - a. Flaring long coat: Justaucorps
 - b. Long waist coat
 - c. Knee length breeches
 - d. Wigs
5. Women's clothing
 - a. The sack gown
 - b. Paniers

B. Rococo Period

1. Enlightenment
2. Beauty of nature
3. Delicate and feminine style
4. Light, clear colors
5. Men's clothing
 - a. Modified coats
 - b. Shorter waistcoats
 - c. Shirt jabots
 - d. Tight fitting breeches
 - e. Redingote
 - f. Tricorne hat
6. Women's clothing
 - a. Gown à la Française
 - b. Gown à l'Anglaise

- c. Gown à la Polonoise
- d. The chemise dress
- e. Court costume
- f. Negligees

C. Children's Costume

- 1. Children as adult miniatures
- 2. Rousseau
- 3. English children — 1775
- 4. Natural shapes
- 5. Muslin and fine linen
- 6. Sailor suits
- 7. Sheath dress

D. Fashion Creators and Publications

- 1. Tailors
- 2. Haberdashers
- 3. Textile designers: silk illustrators
- 4. Fashion journals

Learning Experiences

Have students design, swatch and identify inspiration source for:

- 1. Man's coat inspired by the redingote.
- 2. Women's coat or dress inspired by the redingote.
- 3. Evening gown inspired by Rococo women's clothing.
- 4. Child's garment inspired by late 18th Century children's costume.

VII. FROM REVOLUTION TO EMPIRE IN FRANCE

Teaching Content

A. The Revolutionary Period: Neo Classicism 1789-1795

- 1. Reorganization of society and rise of Bourgeoisie
- 2. Republican ideals: Greek influence
- 3. General democratization
- 4. Utilitarianism
- 5. Individualism
- 6. National colors
- 7. Chemise and sheath dress for women
- 8. Trousers and short jackets for Sans-Culotte
- 9. First ready-to-wear dresses

B. Directoire to Empire 1795-1815

- 1. Ancient Greek and Roman influences
- 2. Body worship
- 3. Moral freedom
- 4. Women's clothing
 - a. White tunic or chemise dress
 - b. Spencer jackets
 - c. Long scarves
 - d. Laced sandals
 - e. Handbags

- f. Caracalla or Titus hairstyles
- g. Pamela bonnet
- h. Increasing elaboration
- 5. Conservatism in men's fashions

Learning Experiences

Have students design, swatch and identify information sources for:

- 1. Man's suit inspired by the Sans-Culotte costume.
- 2. Evening dress inspired by the Empire period costume.

VIII. FROM ROMANTICISM TO WORLD WAR I

Teaching Content

A. Restoration in France 1815-1825

- 1. Transitional period
- 2. Men's clothing
 - a. Pantaloon
 - b. Frock coat
 - c. Cravat
- 3. Women's clothing
 - a. Wider skirts: ankle length
 - b. Natural waistlines
 - c. Wider shoulders
 - d. Leg O'Mutton or ham sleeves
 - e. Large brimmed hats and bonnets
 - f. Turbans

B. The Romantic Period 1825-1850

- 1. Middle class taste
 - a. Romantic sentimentality
 - b. Beau Brummel: the dandy
 - c. Influence of Queen Victoria
 - d. Influence of Middle Ages
- 2. Women's clothing
 - a. Wasp waists: corsets
 - b. Full skirts: stiffened petticoats
 - c. Wide sleeves
 - d. Bertha collars
 - e. Lace and embroidery trimmings
 - f. Redingote dress
 - g. Cashmere shawl
 - h. Amelia Jenks Bloomer
- 3. Men's clothing
 - a. Practicality
 - b. Waistcoat
 - c. Double breasted
 - d. Redingote
 - e. Trousers
 - f. White shirt
 - g. Black or white cravat
 - h. Overcoat
 - i. Cloaks or capes
 - j. Top hats

4. Children's clothing
 - a. Similarity of boys' and girls' clothing
 - b. Pantalottes
- C. From 1850 to 1870
 1. American Civil War and European wars
 2. Improvements in transportation
 - a. Roads
 - b. Canals
 - c. Steamship
 - d. Railroads
 3. Industrial revolution
 - a. Sewing machine
 - b. Improved looms
 - c. Bonnaz and Schitt machines
 - d. Discovery of synthetic dyes
 - e. Paris department stores
 - f. Mass production
 4. Worth and Paris couture
 5. Crinoline skirts
- D. From 1870 to 1914
 1. Political and economic growth
 2. Fashion leadership of France
 3. Practical day costumes
 4. Sporting costumes
 5. Influence of great coutouriers
 - a. Redfern, London
 - b. Jacques Doucet, Paris
 - c. Paul Poiret, Paris
 - d. Paquin, Paris
 - e. Callot Seurs, Paris
 - f. Jeanne Lanvin, Paris
 - g. Caroline Reboux, Paris
 6. Women's clothing
 - a. Bustle
 - b. Polonaise
 - c. Train
 - d. Apron
 - e. Walking suit
 - f. Simple belled skirts in 1890
 - g. Capes
 - h. Corsets
 - i. Tailored suit in 1900
 - j. High collars
 - k. Slim silhouette
 - l. Corsets
 - m. Trimmings for formal wear
 - n. Higher waistline
 - o. Hobble skirt
 - p. Kimono bodice
 - q. Large hats
 7. Men's clothing
 - a. Jacket and dinner jacket
 - b. Suit

- c. Frock coat
- d. Tweed Norfolk jacket
- e. Creased trousers
- f. Types of hats
8. Children's clothing
 - a. Featured in fashion magazines
 - b. Boys to age 5
 - 1) Pleated skirts
 - 2) Blouses
 - c. Older boys
 - 1) Breeches
 - 2) Jackets
 - d. Girls: Kate Greenaway influence
 - e. Bloused styles
 - f. Influences
 - 1) Russian
 - 2) Scottish
 - 3) Sailor
9. Modern fashion magazines
 - a. *Vogue*
 - b. *Harpers Bazaar*
 - c. *Godey's Lady's Book*
 - d. Mail-order catalogues

Learning Experiences

Have students design, swatch and identify source material for:

1. Three garments using various sleeves and neckline treatments of the Romantic Period for inspiration.
2. Dress with a peg skirt and dolman sleeves using the Hobble skirt and Kimono bodice of 1913-14 for inspiration.
3. Man's suit using men's wear of the Romantic period for inspiration.

IX. MAJOR REGIONAL COSTUME INFLUENCES

Teaching Content

- A. Peasant
 1. Austrian
 2. Russian
 3. Dutch
- B. Oriental
 1. Chinese
 2. Japanese
 3. Indian
 4. Persian
- C. African
- D. American Indian

Learning Experiences

Have students design, swatch and identify source material for:

1. Child's dress using peasant costume for inspiration.
2. At-Home costume using Oriental clothing for inspiration.
3. Man's sportswear outfit using either African or American Indian dress for inspiration.

X. MODERN COSTUME

Teaching Content

- A. Liberation of Women
 1. Politically
 2. Economically
 3. Socially
- B. Roaring Twenties
 1. Boyish look in women's clothing
 2. Changes in foundations
 3. Short skirts
- C. Great Coutouriers Between the Wars
 1. Jeanne Lanvin
 2. Maggy Rouff
 3. Madeline Vionnet
 4. Coco Chanel
 5. Grès
 6. Schiaparelli
 7. Carven
- D. New York Stock Market Crash
 1. Return to femininity
 2. Sportswear
 3. Fashion influence of movies
- E. World War II and American Fashions
 1. Claire McCardell
 2. Adrian
 3. Seventh Avenue
 4. Women's uniforms
- F. The French Couture After World War II
 1. Christian Dior
 2. Balenciaga
 3. Givenchy
 4. Grès
 5. Yves St. Laurent
 6. Courreges
- G. English Influence: Mary Quant
- H. Italian Couture
 1. Pucci
 2. Valentino

- I. The "New Generation"
 1. Rise of boutiques
 2. Equality of the sexes

Learning Experiences

Have students design, swatch and identify source material for:

1. Daytime dress using the designs of Vionnet for inspiration.
2. Evening gown using the designs of Grès for inspiration.
3. Man's shirt using the designs of Adrian for inspiration.

Suggested Evaluation

1. Students' design plates should be evaluated on originality and practicality of designs, with consideration being given to proficiency in sketching.
2. Students may be also evaluated on their ability to identify costume characteristics of a given number of historical periods.

Teaching Resources

TEXTS AND REFERENCES

- Boucher, F. *20,000 Years of Fashion*
 Contini, M. *Fashion, from Ancient Egypt to the Present Day*
 D'Assailly, G. *Ages of Elegance*
 Hill, M. and P. Bucknell. *The Evolution of Fashion*

MUSEUM COSTUME COLLECTIONS

- Arizona Costume Institute, Phoenix, Arizona
 Chicago Historical Society, Chicago, Illinois
 Costume Institute, Fashion Institute of Technology, New York, N.Y.
 Dallas Museum of Fashion, Dallas, Texas
 Kansas City Museum of History and Science, Kansas City, Missouri
 Los Angeles County Museum of Art, Los Angeles, California
 Metropolitan Museum of Art, New York, N.Y.
 Smithsonian Institute, Washington, D.C.

INSTRUCTIONAL SUPPLIES

- Slides
- Actual costumes — old and new
- Fabric swatches
- Current fashion photographs and sketches
- Student drawing supplies (as listed in *Introduction to Fashion Drawing*)

ACCESSORY DESIGN

Prerequisites: *Advanced Fashion Drawing; Fashion Design, Past and Present*

Suggested Hours: 45

Behavioral Objectives

This area of instruction should enable students to:

1. Draw accessories with accuracy, speed and flair.
2. Design accessories within the limitations imposed by materials and production methods.
3. Design handbags, gloves, belts, scarves and shoes within the current total fashion picture.

Instructional Guidelines

The student is introduced to the major areas of accessory design. Various types of handbags, gloves, belts, scarves and shoes are analysed in terms of construction, materials, and pictorial representation. Actual samples of the objects under discussion should be introduced in class. Field trips into industry firms should be arranged so that students may become somewhat familiar with the various production processes. Within the time limitations of this type of survey, it is impossible to investigate in depth the production of all the items involved. Jewelry and millinery, certainly important accessories, have been eliminated from this area of instruction because it is virtually impossible to study their design without actually producing samples of the product. In actual practice for the areas covered, the designer sketches ideas and production technicians then produce the first sample. It is with this concept in mind that emphasis in the area of instruction is placed on clear representational drawing of all design details.

Teaching Modules

	Suggested Hours	
	Class	Laboratory
I. Introduction to Accessory Design	1	1
II. Handbags	3	6
III. Gloves	3	5
IV. Belts	2	6

V. Scarves	3	6
VI. Shoes	3	6
Total Hours — — — —	15	30

I. INTRODUCTION TO ACCESSORY DESIGN

Teaching Content

- A. Reasons for Wearing Accessories
 1. Enhance costume
 2. Protection
 3. Provide focal point
- B. Types of Accessories
 1. Jewelry
 2. Millinery
 3. Handbags
 4. Gloves
 5. Belts
 6. Scarves
 7. Shoes
- C. General Techniques of Presentation
 1. On the body
 2. As items by themselves
 3. Rendering methods

Learning Experiences

Students will examine, discuss and analyze the accessories they are wearing and their own reasons for wearing and/or purchasing them.

II. HANDBAGS

Teaching Content

- A. Review Perspective
- B. Appropriate Materials
 1. Leathers
 - a. Calf
 - b. Pin seal
 - c. Reptile: lizard, snake, alligator
 - d. Ostrich
 2. Processed leathers
 - a. Patent
 - b. Suede
 3. Plastics: simulate all leathers
 4. Fabrics

- a. Canvas
- b. Linen
- c. Satin
- d. Moire
- e. Velvet and cut velvet
- f. Brocade
- 5. Embellished fabrics
 - a. Embroidered
 - b. Beaded
- 6. Straw: rigid and flexible

C. Shapes

- 1. Clutch: sew on frame
- 2. Box
- 3. Envelope
- 4. Vanity
- 5. Satchel
- 6. Tote
- 7. Bucket
- 8. Draw String
- 9. Barrel
- 10. Pouch
- 11. Sack
- 12. Shoulder

D. Hardware and Closings

- 1. Nailheads
- 2. Monograms
- 3. Chains
- 4. Hooks
- 5. Clasps
- 6. Zippers
- 7. Buckles

Learning Experiences

Have students design and illustrate handbags, identifying the type of apparel being accessorized, the occasion and the age of the customer for which each bag is designed:

- 1. Three handbags for sportswear
- 2. Three handbags for daytime dress
- 3. Three handbags for evening wear

III. GLOVES

Teaching Content

- A. Drawing Hands
- B. Glove Construction
 - 1. Various thumbs
 - 2. Types of stitching
 - 3. Basic styles
 - a. Gauntlet
 - b. Cuff
 - c. Shirred
 - d. Racing gloves

- e. Mittens

C. Button Lengths

- 1. Shortie
- 2. Wrist
- 3. Bracelet
- 4. Mid-arm
- 5. Elbow
- 6. Opera
- 7. Shoulder

D. Occasions for Wearing Gloves

E. Appropriate Materials

- 1. Leather
 - a. Kid
 - b. Suede
 - c. Pigskin
- 2. Knits
 - a. Cotton
 - b. Nylon
 - c. Wool
- 3. Plastic
- 4. Lace
- 5. Glove Linings
 - a. Silk
 - b. Wool
 - c. Fur

Learning Experiences

Have students design and illustrate:

- 1. Three pairs of leather gloves for day or evening wear.
- 2. Three pairs of knit gloves for sports or day wear.

IV. BELTS

Teaching Content

- A. Relation of Belt to the Garment
 - 1. Dresses
 - 2. Skirts and trousers
 - 3. Coats and jackets
- B. Shapes of Belts
 - 1. Straight
 - 2. Contour
 - 3. Cummerbund
 - 4. Hipster
- C. Appropriate Materials
 - 1. All kinds of leathers
 - 2. Plastics: simulating leathers or as links in chains
 - 3. Fabric: simple, embroidered, beaded
 - 4. Straw
 - 5. Elasticized braid, leather, or fabric
 - 6. Braid
 - 7. Ribbon
 - 8. Metals: chain belts

D. Hardware and Closings

1. Buckles
2. Clasps
3. Hooks
4. Snaps
5. Nailheads

E. Sizing: methods of providing flexibility

Learning Experiences

Students will design, illustrate and specify materials, hardware and closing for:

1. Three dress belts
2. Three sportswear belts
3. Three evening belts

V. SCARVES

Teaching Content

A. Relation of Scarves to the Garment

1. Dress
2. Coat

B. Types of Scarves

1. Rectangular
 - a. Narrow or wide
 - b. Various lengths
 - c. Tubular knits
2. Square
3. Stoles, ponchos and shawls
 - a. Shaped: cape, triangular
 - b. Straight

C. Appropriate Materials

1. Silk: plain weave, twill, chiffon
2. Synthetics: rayon, nylon, polyester, orlon, dacron, etc.
3. Wool: woven, knit, crochet
4. Fur

D. Printed Scarves

1. Designs
 - a. Geometric: may involve repeats
 - b. Objects
 - c. Signatures
 - d. Abstract art
2. Methods of Painting
 - a. Opaque
 - 1) Tempera paints
 - 2) Clearly defined color areas
 - b. Transparent
 - 1) Dyes
 - 2) Overlapping colors
 - 3) Luminous effects
 - c. Costs of reproduction
 - 1) Many colors
 - 2) Maximum of 6 colors

3. Methods of Reproduction

- a. Silk screen: most practical
- b. Roller printing
- c. Tie and dye
- d. Batik

Learning Experiences

Have students design two printed silk scarves using opaque or transparent paints.

VI. SHOES

Teaching Content

A. Drawing Feet

B. Function of Shoes

1. Protection
2. Fashion

C. Types of Shoes

1. Pump
2. Sandal
3. Oxford
4. Ghillie
5. Loafer
6. Moccasin
7. Espadrilles
8. Slipper
9. Scuff
10. Clog
11. Boot

D. Styling Areas

1. Color
2. Silhouette
3. Heel shape and height
4. Texture and surface finish
5. Ornamentation

E. Planning the Line

1. Spring - Summer
2. Fall - Winter
3. Timing: in advance of season

F. Appropriate Materials: Uppers

1. Leather
 - a. Cowhide
 - b. Calf
 - c. Kid
 - d. Reptile: alligator, snake, lizard
 - e. Horsehide: cordovan
 - f. Ostrich
 - g. Sheepskin
2. Processed Leathers
 - a. Patent
 - b. Suede
3. Fabrics
 - a. Linen

- b. Canvas
- c. Silk, satin
- d. Nylon: mesh, velvet
- 4. Rubber
- 5. Plastics: vinyl, corfoam

G. Appropriate Materials: Heels and Soles

- 1. Leather
- 2. Plastic
- 3. Wood
- 4. Cork
- 5. Rubber
- 6. Braided rope

H. Ornamentation and Closings

- 1. Laces
- 2. Buckles
- 3. Bows
- 4. Jewels
- 5. Buttons
- 6. Clasps

Learning Experiences

Have students illustrate:

- 1. Four shoe designs for a Spring-Summer line using appropriate materials.
- 2. Four shoe designs for a Fall-Winter line using appropriate materials.

Suggested Evaluation

Students' designs and drawings are evaluated in relation to the accuracy and explicitness of the illustration as well as the originality of the design. At the completion of this area of instruction, students will have produced a portfolio consisting of well executed sketches of original designs, which can then be used for future employment interviews.

Teaching Resources

TEXTS AND REFERENCES

Sloan, E. *Illustrating Fashion*

INSTRUCTIONAL SUPPLIES

- Examples of various finished accessories
- Samples of the materials used in accessories, as discussed in class

FACILITIES, EQUIPMENT AND COSTS, AND INSTRUCTIONAL SUPPLIES

FACILITIES

Minimum space requirements for the establishment of an Apparel Design and/or an Apparel Production program are two large areas. One area is to be utilized for the cutting and sewing room and the other area is to be used for both pattern development and fashion drawing.

The basic areas should comprise approximately 1600 sq. ft. for the Production laboratory and 800 sq. ft. for the Apparel Design laboratory (see Figure 1). A dressing room is provided in the cutting and sewing room for fitting purposes. Sinks with hot and cold running water should be installed in both areas.

Electrical Services should provide both 110 and 220 volt electrical service for these laboratories. In connecting electrical service in the laboratory, it is suggested that circuit breakers be utilized with ample capacity so that when a number of students are using electrical apparatus, the lines will not become overloaded. A master distribution control panel should be installed.

The layouts which are included are suggested as examples of satisfactory laboratories for garment design and construction. Since no one laboratory layout meets every need, one flexible arrangement is illustrated. The layout offers certain features which may assist in the design of a laboratory to satisfy the needs of a particular school's program. It should be noted that the layout does not illustrate placement of wiring for electricity or pipes for plumbing. It is suggested that when the equipment is purchased, it should include correct installation.

Storage Space

Storage space must be planned carefully for both instructional areas. Students need space to store garments under construction and tools, as well as drawings and paintings. Space is also needed to store illustrative materials and fabrics for instructional use. (see Figures 2 and 3)

Students may store current work and tools in boxes, which are placed on closet shelves, between classes. Another very effective storage system for student work consists of deep trays that glide along wooden slats

secured to the closet walls. These trays are durable, can be carried with ease to work table or machine, and replaced in their assigned places at the end of class. To store muslins and partially finished garments on hangers, students will need a wardrobe closet.

A good system for storing student's art work is in vertical, narrow spaces, very much like those designed to store trays in a modern kitchen. Students keep their work in a large portfolio, which in turn, fits into its assigned space.

General storage space for the instructor should include closets with shelves deep enough to store rolls of fabric. The most common width for cottons and synthetics is 45 inches and this width should be adequate for most fabrics. Fabrics that are wider are usually rolled with a center fold and need no additional space. A section of this closet might also serve to store rolls of pattern-making paper. Papers for patternmaking include plain white bond, oak-tag, and marker making paper. For the storage of illustrative material, the instructor will also need a wardrobe closet to store garments, muslins and patterns on hangers. A file cabinet is needed to store the constantly evolving collection of current fashion sketches and photographs. There should also be shelf space for the storage of paper patterns and drafts, as well as tools and equipment needed for demonstrations.

EQUIPMENT

Basic equipment for the cutting and sewing room should consist of large 5' by 20' cutting table equipped with straight knife and round knife cutting machines.* This table can be used for hand cutting as well as instruction and practice with industrial machinery.* There should be a single needle power sewing machine with various attachments for every student in the class. If maximum class size is 24 students, then 24 machines must be available. In addition, certain specialty machines permit instruction on a professional level throughout the finishing of a garment. To insure proper handling of knits and sportswear, two overedge machines and one superlock

*If the instructional program is to be limited to Apparel Design, industrial cutting machinery is not needed.

machine are needed for a class of 24 students. In addition, one buttonhole machine, one buttonsew machine, one zig-zag machine, and one blind stitch machine round out the basic sewing equipment. Pressing equipment should consist of 4 self-contained steam generator and vacuum units with hand steam irons.

The area devoted to Pattern Development and Fashion Drawing should have an arrangement of multi-purpose tables and chairs. There should be approximately 48" by 24" of table space for each student. Trapezoidal tables are particularly useful for various arrangements. They can be arranged in a large circle for discussions and demonstrations, or they may be arranged in straight lines when long tables are required for patternmaking and draping. Table tops should be covered with a thin layer of work sheeting so that fabric and paper can be secured with pins without causing damage to the surface. These flexible tables are ideal for Patternmaking and Draping, and with the use of portable drawing boards, for drawing and painting.

There should be a 9' by 3½' multi-purpose demonstration table, also cork surfaced, for the instructor. An overhead mirror, angled so that it reflects the instructor demonstrating, is helpful in order to make the demonstration visible to the students from their seats. This is particularly important for demonstrations of drawing and painting since students are expected to work along with the instructor throughout the lecture.

For classes in Pattern Development, there must be a dress form for each student. It is impossible to drape without a dress form and any shortage in this area will result in students not being able to work with the rest of the class. Since torso length dress forms are least expensive, it is recommended that these be purchased for general use, but in addition, there should also be at least full length slacks forms available for fitting trousers. Unfortunately dress forms deteriorate with constant use and must be replaced from time to time. Budgets should

include an item for some replacement of forms almost every year.

All fabrics must be pressed before draping, and pressing equipment must also be available in the room used for Pattern Development.

It should be noted that sewing machines have been identified by manufacturer's name. Further investigation will show that sewing machines, capable of producing identical stitching, produced by different sewing machine manufacturers are being suggested. This recommendation pertaining to specific manufacturers is made so that students can become familiar with the many different machines they will confront in the industrial situation. (Sewing machines produced by different sewing machine manufacturers, performing the same sewing function, have different mechanical and operating characteristics.)

INSTRUCTIONAL SUPPLIES

In both Apparel Design and Apparel Production programs, it is imperative that students have a constant supply of fabric available for experimentation and practice. This continual cost is often an insurmountable financial burden for the student and therefore fabrics have to be provided. Industry resources can be helpful by donating fabrics and other working materials, such as trimmings and notions for student use. Each student in the Apparel Production program will need approximately 250 square yards of fabric throughout a comprehensive training program. For Apparel Design students in a comprehensive design training program, approximately 150 square yards of fabric should be sufficient. Three-fourths of this yardage should be unfinished muslin for the areas of instruction in Pattern Development; the balance should be fabrics for finished garments.

Equipment and Approximate Costs

SEWING MACHINES (with motors and tables and stands)

<i>Quantity</i>	<i>Item</i>	<i>Approximate Total Cost</i>
11	Singer 281-3	\$ 4,950.00
11	Union Special 630400-B	4,950.00
1	Singer 253-12	450.00
1	Union Special 51200	450.00
1	Rimoldi 227	1,000.00
1	Singer 990	1,000.00
1	Union Special 39600	1,100.00
1	Columbia 300	400.00
1	Reece R2	1,000.00
1	Singer 269 with button hopper	1,200.00
1	Singer 107 W4	550.00
1	Rimoldi 229	1,100.00

PRESSING EQUIPMENT

<i>Quantity</i>	<i>Item</i>	<i>Approximate Total Cost</i>
4	*Sussman Model DM 26 HAR underpressing and finishing systems with steam hand irons	\$ 3,600.00

SPREADING EQUIPMENT

<i>Quantity</i>	<i>Item</i>	<i>Approximate Total Cost</i>
1	**C.R.A. Rodway Spreading Machine	\$ 450.00
1	**C.R.A. Woolen Turntable Spreading Machine	300.00
1	**C.R.A. Cutting Table (Masonite)	260.00

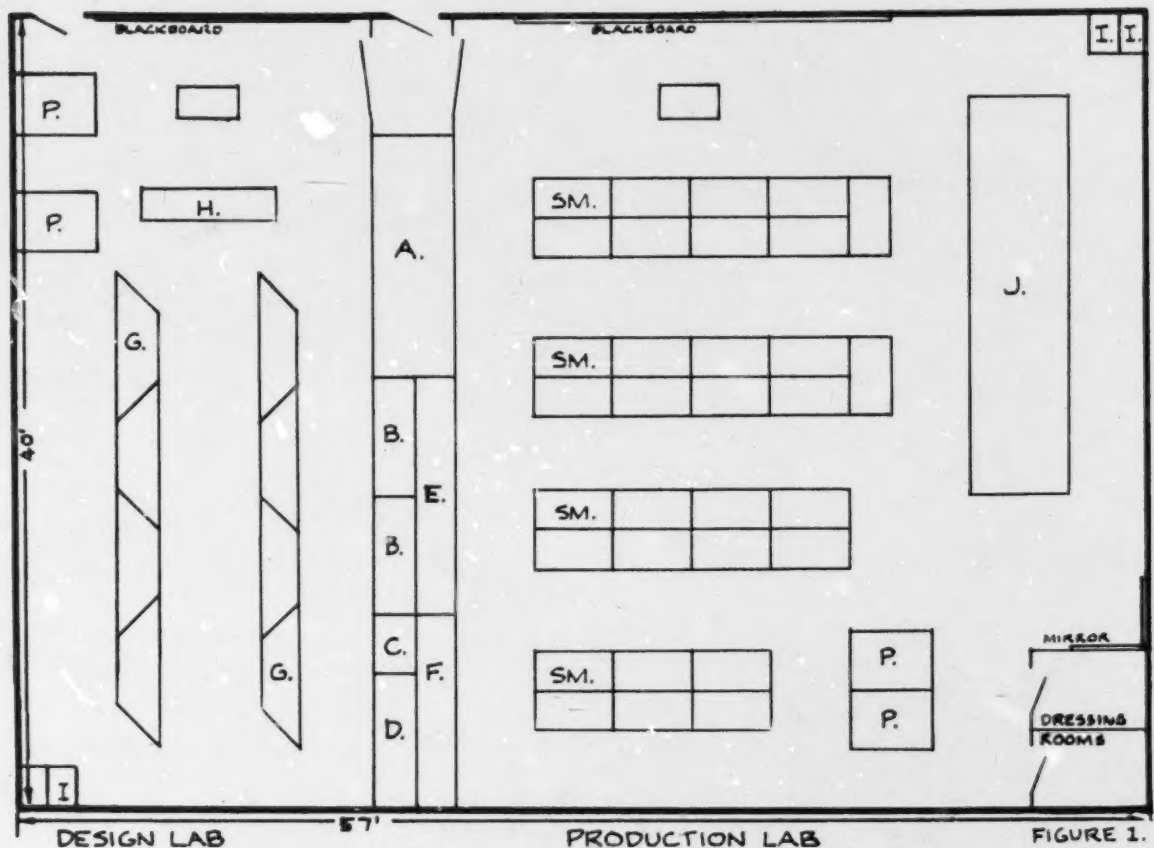
DRESS FORMS

<i>Quantity</i>	<i>Item</i>	<i>Approximate Total Cost</i>
20	***Torso 4 of each size: 6,7,8,9,10	\$ 1,550.00
4	***Full length leg forms 1 of each size: 7,8,9,10	900.00
1	***Child's full length leg form size 4	125.50

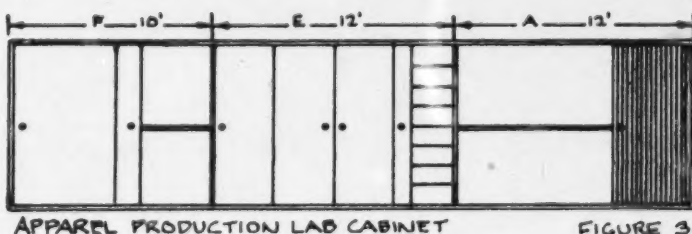
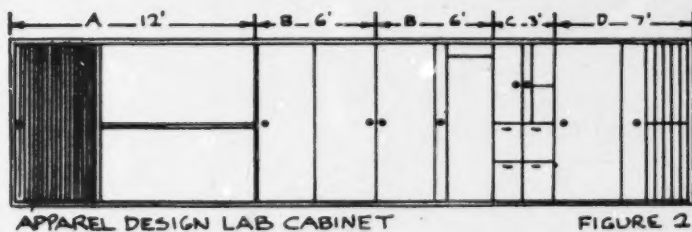
TOTAL \$25,335.50

SUPPLIERS

- * Automatic Steam Products Corp., 43-30 34th Street, Long Island City, New York 11101
- ** Cutting Room Appliances Corp., 1134 Broadway, New York, New York 10010
- *** Wolf Model Form Co., 140 Fifth Avenue, New York, New York 10011



Apparel Design and Production Laboratories



LAYOUT LEGEND

- A. STORAGE FOR FABRIC & PAPER.
- B. WARDROBE CLOSETS.
- C. SHELF SPACE BEHIND SLIDING DOORS - OVER FILE CABINETS.
- D. PORTFOLIO & DRAWING BOARD STORAGE. (OPENINGS WILL BE 5")
- E. WORK TRAY UNITS FOR FABRICS, SWATCHES & GARMENTS.
- F. SHELF SPACE BEHIND SLIDING DOORS.
- G. MODULAR TABLES.
- H. CORK TABLE.
- I. SINKS.
- J. CUTTING TABLE.
- SM. SEWING MACHINES.
- P. PRESSING TABLES.

SCALE: 1/4" = 1'

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SELECTED PERIODICALS

ACCESSORIES

- Handbags and Accessories*, 1133 Broadway, New York, N.Y. 10010
- Boot and Shoe Recorder*, Chestnut and 56 St., Phil., Pa. 19139

APPAREL PRODUCTION

- Apparel Executive*, 77 Maple Drive, Great Neck, N.Y. 11021
- Apparel Manufacturer*, Riverside, Conn. 06878
- The Bobbin*, Box 527, Columbia, S.C. 29202
- Femme-Lines*, 1440 Broadway, New York, N.Y. 10018
- Journal of the Apparel Research Foundation*, 1120 Connecticut Ave. N.W., Washington, D.C. 20036
- Knitting Times*, 51 Madison Ave., New York, N.Y. 10010
- Maker-Up*, 42 Gerrard St., London W.1, England
- Manufacturing Clothier*, 42 Gerrard St., London W.1, England
- Needle's Eye*, 404 North Franklin St., Chicago, Ill. 60610
- Southern Garment Manufacturer*, 75 Third St., N.W., Atlanta, Ga. 30308
- Western Apparel Industry*, 112 West 9 St., Los Angeles, Calif. 90015

GENERAL

- American Fabrics*, 24 East 38 St., New York, N.Y. 10016
- Clothes*, 47 East 44 St., New York, N.Y. 10017
- Officiel De La Couleur*, 14 Rue Duphot, Paris (1E), France
- Women's Wear Daily*, 7 East 12 St., New York, N.Y. 10003

MEN'S FASHIONS

- Custom Tailor*, 400 Madison Ave., New York, N.Y. 10017
- Daily News Record*, 7 East 12 St., New York, N.Y. 10003
- Esquire*, 488 Madison Ave., New York, N.Y. 10022
- Gentlemen's Quarterly*, 488 Madison Ave., New York, N.Y. 10022
- Men's Wear*, 7 East 12 St., New York, N.Y. 10003

WOMEN'S AND CHILDREN'S FASHIONS

- Bride's Magazine*, 420 Lexington Ave., New York, N.Y. 10017
- Fashion Calendar*, 8 East 77 St., New York, N.Y. 10021
- Femme*, 8 Rue Halevy, Paris (NE), France
- Glamour*, 420 Lexington Ave., New York, N.Y. 10017

Harper's Bazaar, 717 Fifth Ave., New York, N.Y.
10022

Infant's and Children's Review, 101 West 31 St.,
New York, N.Y. 10001

Des Jardin Modes: Panorama, 14 Rue De Clery,
Paris (2E), France

Linea Italiana, 437 Madison Ave., New York, N.Y.
10022

L'Officiel De La Couture Et De La Mode De Paris,
226 Rue De Faubourg St. Honore, Paris (8E),
France

Mademoiselle, 420 Lexington Ave., New York,
N.Y. 10017

Queen, 52 Fetter Lane, London E.C.4, England

Seventeen, 320 Park Ave., New York, N.Y. 10016

Vogue, 420 Lexington Ave., New York, N.Y.
10017

Vogue Patterns, 161 Avenue of the Americas, New
York, N.Y. 10013

Appendix

REPRESENTATIVE TRADE ASSOCIATIONS

- AFFILIATED DRESS MANUFACTURERS, 1440 Broadway, New York, N.Y. 10018
- ALLIED UNDERWEAR ASSOCIATION (AUA), 1450 Broadway, New York, N.Y. 10018
- AMERICAN CLOAK AND SUIT MANUFACTURERS ASSOCIATION (AC SMA), 450 Seventh Avenue, New York, N.Y. 10001
- ASSOCIATION OF BOYS & STUDENTS CLOTHING MANUFACTURERS, 135 West 50th Street, New York, N.Y. 10020
- ASSOCIATED CORSET AND BRASSIERE MANUFACTURERS, 220 Fifth Avenue, New York, N.Y. 10001
- BOYS AND YOUNG MEN'S APPAREL MANUFACTURERS ASSOCIATION (BAMA), 10 West 33rd Street, New York, New York 10001
- CHILDREN'S DRESS, COTTON DRESS, AND SPORTWEAR CONTRACTORS ASSN., 228 West 39th Street, New York, N.Y. 10018
- CLOTHING MANUFACTURERS ASSOCIATION OF THE U.S.A. (CMA), 135 West 50th Street, New York, N.Y. 10020
- CORSET AND BRASSIERE ASSOCIATION OF AMERICA (CBAA), 180 Madison Avenue, New York, N.Y. 10016
- FASHION GROUP, 9 Rockefeller Plaza, New York, N.Y. 10020
- GREATER BLOUSE, SKIRT AND UNDERGARMENT ASSOCIATION, 225 West 34th Street, New York, N.Y. 10001
- GREATER CLOTHING CONTRACTORS ASSOCIATION, 100 Fifth Avenue, New York, New York 10011
- INDUSTRIAL ASSOCIATION OF JUVENILE APPAREL MANUFACTURERS (AJAM), 225 West 34th Street, New York, N.Y. 10001
- INDUSTRIAL ASSOCIATION OF HOUSE DRESS, ROBE AND UNIFORM MANUFACTURERS, 225 West 34th Street, New York, N.Y. 10001
- INFANTS' AND CHILDREN'S COAT ASSOCIATION (ICCA), 450 Seventh Avenue, New York, N.Y. 10001
- LINGERIE MANUFACTURERS ASSOCIATION (LMA), 41 East 42nd Street, New York, N.Y. 10017
- NATIONAL ASSOCIATION OF BLOUSE MANUFACTURERS (NABM), 450 Seventh Avenue, New York, N.Y. 10001
- NATIONAL ASSOCIATION OF DAYTIME DRESS MANUFACTURERS (NADDM), 60 Park Avenue, New York, N.Y. 10016
- NATIONAL ASSOCIATION OF GLOVE MANUFACTURERS (NAGM), 52 South Main Street, Gloversville, N.Y. 12078
- NATIONAL DRESS MANUFACTURERS ASSOCIATION (NDMA), 570 Seventh Avenue, New York, N.Y. 10018
- NATIONAL KNITWEAR MANUFACTURERS INSTITUTE, 350 Fifth Avenue, New York, N.Y. 10001
- NATIONAL OUTERWEAR AND SPORTSWEAR ASSOCIATION (NOSA), 347 Fifth Avenue, New York, N.Y. 10016
- NATIONAL SKIRT AND SPORTSWEAR ASSOCIATION (NSSA), 225 West 34th Street, New York, N.Y. 10001
- NEW ENGLAND KNITTED OUTERWEAR ASSOCIATION (NEKOA), 10 Tremont Street, Boston, Mass. 02108
- NEW YORK CLOTHING MANUFACTURERS ASSOCIATION, 292 Madison Avenue, New York, N.Y. 10017
- NEW YORK COAT & SUIT ASSOCIATION (NYCSA), 225 West 34th Street, New York, N.Y. 10001
- NEW JERSEY DRESS MANUFACTURERS AND CONTRACTORS ASSOCIATION, 1440 Broadway, New York, N.Y. 10018
- NEW YORK COUTURE BUSINESS COUNCIL, 141 West 41 Street, New York, N.Y. 10036
- POPULAR PRICED DRESS MANUFACTURERS GROUP (PPDMG), 1440 Broadway, New York, N.Y. 10018
- UNIFORM MANUFACTURERS EXCHANGE (OME), 112 East 19th Street, New York, N.Y. 10003
- UNITED BETTER DRESS MANUFACTURERS ASSOCIATION (UBDMA), 110 West 40th Street, New York, N.Y. 10018
- UNITED INFANTS' AND CHILDREN'S WEAR ASSOCIATION (UICWA), 225 West 34th Street, New York, N.Y. 10001